HEALTH INSURANCE ADMINISTRATIVE COSTS

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by

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and

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NOTE

The central issue to which this study addresses itself is that of effi-
ciency in the provision of health insurance. By efficiency the authors
mean both efficiency arising from the choice of optimal scale of opera-
tion and efficiency arising from cost minimization at whatever scale is
chosen. There are basically three different large health insuring enti-
ties in the United States: the commercial health insurers, the nonprofit
Blue Cross-Blue Shield plans, and the Federal Government's Medicare pro-
gram. Because the last program largely has a different clientele from
the first two and because the first two each offer different kinds of
health insurance, it is difficult, if not impossible, to make direct com-
parisons of efficiency between the three entities. Instead, the authors
drew inferences about efficiency from economic theory and then tested
these inferences empirically. Their conclusions flow directly from the
empirical estimates and from the theoretical inferences on which the
empirical estimates were made.

This study is not intended to be the final word on the subject. Most
of the data are from 1971, and it is now 1975--in an area such as the
insurance of health care, where technology has changed so rapidly, con-
ditions may have changed. Further, very little work has been done by
economists on the service industries in general and on the health insur-
ance industry in particular. Nonetheless, this study represents a large
body of information that had not heretofore been available and which the
authors have carefully analyzed. We publish the study with the hope that
it will provide a basis for provoking informed discussion among those who
are interested in the administrative aspects of health insurance.

The views expressed here are those of the authors who made the analysis. They should not be ascribed to the Social Security Administration nor to the trustees, officers, and other staff members of the University of Florida.

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CHAPTER 1: INTRODUCTION

Health insurance is a large and important industry in the United States. In 1971 about 90 percent of the Nation's population was covered by health insurance. 1/ Including Medicare, health *insurance* expenditures were $30.6 billion, or 2.9 percent of Gross National Product (GNP), 2/ and total health *expenditures* in 1971 were $75 billion and represented 7.4 percent of GNP. In contrast, factory sales of all automobiles and parts were $46.7 billion, and all cash receipts from farming, including Government payments, were $53.1 billion. 3/

Table 1 summarizes the health insurance situation in 1971. Of all persons under age 65 with health insurance, Blue Cross, Blue Shield, and medical society plans covered 42.4 percent for hospital expenses and 40.3 percent for surgical expenses. Commerical insurance companies and other plans covered the remaining insured population under age 65. Medicare covered 10.9 percent of the insured population with hospital insurance and 11.4 percent of the insured population with surgical protection. 4/ The commerical insurers paid 36 percent; Blue Cross-Blue Shield, 33 percent; and Medicare 36, 33, and 31 percent of all health insurance benefits. Thus, Medicare paid a much larger average claim per insuree than either the commerical insurers or Blue Cross-Blue Shield, an expected fact, given the age and morbidity characteristics of the Medicare population. In the same year $4.1 billion was spent on administering health insurance, of which the commercial insurers spent 75 percent. The operating ratios, which are obtained by dividing administrative expenses by premiums written, vary widely, depending on type of insurer and type of policy. 5/

Clearly, the health insurance industry 6/ occupies a relatively large place in the U.S. economy. Furthermore, more than 14 percent of all money collected from the public to provide health insurance protection

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1/ Marjorie Smith Mueller, "Private Health Insurance in 1971: Health Care Services, Enrollment, and Finances," *Social Security Bulletin*, February 1973, p. 11.

2/ Includes $1.7 billion for disability income insurance and also includes health insurance administrative expenditures.

3/ U.S. Dept. of Commerce, *Survey of Current Business* (Washington: U.S. Govt. Print. Off., December 1972).

4/ Health Insurance Institute, *1972-73, Source Book of Health Insurance* (New York: The Institute, 1973), p. 5.

5/ Individual or group and hospital insurance or supplementary medical insurance.

6/ Even though Medicare is a Federal program, it is included as part of the health insurance industry because its major administrative work is fulfilled by Blue Cross-Blue Shield and certain designated commerical companies.

is used to meet administrative costs. There have been sound studies of
health insurance in general, 7/ but no comprehensive sytematic study
of the costs of administering health insurance. This study aims at fill-
ing the gap in the state of knowledge about health insurance. There
have been many public statements by various persons and groups concerning
the costs of administering health insurance since the beginning of the
debate on the form national insurance should take. This study should
provide a larger statistical base for future debate on national health
insurance, and the analysis should provide a useful framework for view-
ing the costs of administering health insurance in all their complexity.

The Central Issue: Efficiency

The central issue in this study *is efficiency in the provision of health
insurance*. We mean efficiency arising both from the choice of optimal
scale of operation and from cost minimization at whatever scale is
chosen. As pointed out in chapter 2, "Summary and Conclusions," and in
chapter 3, "The Concept of Cost," each of the present insuring entities--
the commercial insurers, Blue Cross-Blue Shield, and Medicare--produce
a different "output" since they provide more than just health insurance,
and the extras they provide differ in form and value, sometimes sharply.
Consequently, they perform different functions, the costs of which are
not separately identifiable. Thus, direct comparisons of relative effi-
ciency cannot be made because functional cost data are lacking. Never-
theless, estimation of cost functions, based on economic theory, allows
the drawing of inferences about efficiency. The major portion of this
study is concentrated on the estimation of these cost functions and the
inferences about efficiency which flow from those estimates.

Chapter 2 sets forth the summary and conclusions of the study. Chapter
3 centers on the problem of how to view costs and discusses the diffi-
culties in comparing the administrative costs of health insurance across
the three main health insurers. Accordingly, chapter 4 presents an
analysis of the administrative costs of the commercial insurance com-
panies. Chapter 5 contains an analysis of the operating cost structure
of Blue Cross-Blue Shield Plans, and chapter 6 examines Medicare's ad-
ministrative costs.

7/ See Duncan M. MacIntyre, *Voluntary Health Insurance and Rate
Making* (Ithaca: Cornell University Press, 1962); Roy J. Hensley,
Competition, Regulation and the Public Interest in Nonlife Insurance
(Berkeley: University of California Press, 1962); John Krizay and Andrew
Wilson, *The Patient As Consumer: Health Care Financing in the United
States* (Lexington: D.C. Heath and Company, 1974); and Sylvia A. Law,
Blue Cross What Went Wrong? (New Haven: Yale University Press, 1974).

Implications for National Health Insurance

The results of this study have important implications for national health insurance. Many of the current proposals envision a system whereby standard health insurance packages will be provided to all employees. The employer will obviously want to minimize the costs of providing these packages. On efficiency grounds, then, our findings of economies of scale for commercial insurers indicate that national health insurance ought to be centralized in the hands of large, competitive firms. This is not to say that Blue Cross-Blue Shield has no role to play in national health insurance. Our findings on the Blues, however, indicate that the Blues' artificial competitive advantages probably should be eliminated to remove one impediment to the achievement of economies of scale in the competitive process.

The standardized insurance packages, which all the pending major bills on national health insurance require, will remove the current problems of consumer confusion over the many policies now available. As market imperfections caused by consumer befuddlement are reduced, price competition will become more important. There will be two beneficial results of the increasing importance of price competition. First, administrative costs will be held to a minimum. Second, although selling costs cannot be removed entirely, they will be held to the socially efficient level.

There are, however, several tempering factors. For one, if all existing insurers are of the minimum efficient size, the industry will be significantly more concentrated than it now is. With far fewer firms, collusive behavior is more likely. Of course, if the firms collude, there is no reason to expect society to enjoy the benefits of efficient administration.

Another tempering factor is that consumer confusion will not be totally eliminated by standardized packages. There will always be room for supplemental insurance to complement or extend the mandatory coverage. We should not expect these policies to be any less confusing than those currently available.

Finally, some members of the population--the poor and elderly--will have their national health insurance purchased for them by the Government. 8/ If the Government handles such purchases as it handles Medicare, the insurance firms will do the administrative work and the Government will reimburse them. If the insurers are reimbursed at cost, the same perverse incentive to maximize, rather than minimize, administrative costs now seen under Medicare will be introduced into this segment of the national health program. One way to avoid this perverse incentive is

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8/ We assume that lump sums of cash will not be given to them to purchase their own insurance.

the payment of capitation administrative costs. Such a payment scheme
would restore the incentive to minimize costs. The appropriate capita-
tion rate could be determined through an iterative process. 9/

Efficiency in administration, however, may not be the sole criterion for
the choice of the form of national health insurance administration.
Given the rapid increase in the cost of medical care and the exacerbating
influence of national health insurance, policymakers may wish to estab-
lish a system that will hold down the costs of medical services. There
are two distinct roles that an insurer can play in the payment process--
the *conduit* and the *advocate*.

When the insurance firm assumes the *conduit* role, it merely pays the bills
that are submitted. The consumer faces several price variables in the
medical care market: the annual health insurance premium, the deductible
on his policy, and the coinsurance on bills above the deductible. And
he exercises indirect control over the cost of a given quality of medical
services through his willingness to pay premiums, deductibles, and coin-
surance. When the insurer assumes the *advocate* role, he explicitly
recognizes the fact that he, the insurer, enjoys more market power than
the individual consumer and thereby has more ability to control the cost
of health care. In fact, given the nature of the insurance transaction
and the way bills are paid, the insurer really becomes a surrogate buyer
of medical services. Consequently, the insurer can be expected to assume
some responsibility for controlling the consumer's cost of a given qual-
ity of care.

It would seem that the *conduit* concept of administration plus first-
dollar insurance would lead inexorably to inflation in the health sector.
The inevitability of inflation results from the lack of a nexus between
the payment for a medical service and the consumption of it. Because
there is no direct link between what providers charge and what consumers
are willing to pay, there are no competitive pressures on providers to
hold down costs. Consequently, prices in the medical care sector have
risen much more rapidly than in other economic sectors. This has been
particularly true as insurance coverage has broadened and deepened to
take care of Medicare and Medicaid.

If a major subsidiary concern of the national health insurance program
is to mitigate spiraling prices in the medical care industry, adminis-
tration by large competing firms may not be a practical way to attain
this objective. In the presently atomized health insurance industry,
there is no evidence that the advocacy role is now effectively exer-

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9/ It is possible, of course, that firms paid by capitation will
simply refuse to render services if the capitation rate is set too low
in their opinion. However, the iterative process should presumably
find that point on the industry marginal cost function when all benefi-
ciaries are included.

cised. To the extent that consumer confusion is reduced by standardization of coverage, competitive forces should be expected to result in a more concentrated market structure.

Nonetheless, the industry will support a substantial number of firms of minimum, efficient size. This will yield a market structure that is still insufficiently concentrated to support an advocacy role for the remaining firms. Given competitive pressures, no single firm will have incentive to expand funds in trying to hold down medical care prices.

A priori reasoning suggests that the advocacy role could be better exercised by a monopsonistic buyer of health care. Unfortunately, there is a disturbing tradeoff to be made. Although we cannot be sure whether present Medicare administrative costs are high or low, the presumption is that they are higher than they would be if Medicare were administered competitively. Medicare is a monopsonistic buyer of health care for some 10 percent of the population. If a single Government agency became the sole administrator for the entire population, we would expect national health insurance to be administered less efficiently than under conduit-role competition. In contrast, the savings in benefit payments by having a monopsonistic advocate could more than offset the possibly increased administrative costs which could result from no competition.

There is a third option, and it is one that would preserve the competitive aspect plus the advocacy role. National health insurance administrative cost payments could be made to insurers or health maintenance organizations on a capitation rather than a premium basis. Use of an iterative procedure could determine the capitation fee. This type of payment would serve to internalize the incentives for efficiency just as it has in current health maintenance organizations. Insurers, thus, would have strong internal incentives to assume an advocacy role.

TABLE 1.--Health insurance: Persons insured, benefits paid, premiums paid, administrative costs, and operating ratios, 1971

Item	Number
Number of persons (in thousands):	
Commercial insurers and Blue Cross-Blue Shield (persons under 65):	
Hospital expenses...	168,513
Surgical expenses...	155,841
Regular medical expense...	135,970
Major medical expense...	78,516
Disability income:	
Short-term...	58,850
Long-term..	12,011
Medicare:	
Hospital insurance..	20,590
Supplementary medical insurance...	20,012
Benefits paid (in millions):	
Insurance companies...	$9,069
Hospital expense..	4,391
Surgical, medical, and dental expense...	2,991
Disability income...	1,687
Blue Cross, Blue Shield, and other noncommercial hospital medical plans.....................	8,711
Hospital expense..	5,925
Surgical, medical, and dental expense...	2,786
Medicare 1/...	7,478
Hospital insurance..	5,443
Supplementary medical expense...	2,035
Total...	25,258
Health insurance premiums (in millions):	
Insurance companies...	$12,777
Group...	9,170
Individual..	3,607
Blue Cross, Blue Shield, and other noncommercial hospital plans............................	9,996
Medicare 2/...	7,875
Hospital insurance..	5,592
Supplementary medical insurance...	2,283
Total...	30,648
Administrative costs (in millions):	
Insurance companies...	$3,000
Group...	1,248
Individual..	1,752
Blue Cross, Blue Shield, and other noncommercial hospital medical plans.....................	703
Medicare..	397
Hospital insurance..	149
Supplementary medical insurance...	248
Total...	4,100
Operating ratios (percent):	
Insurance companies...	23.5
Group...	13.6
Individual..	48.6
Blue Cross, Blue Shield, and other noncommercial hospital medical plans.....................	7.0
Medicare..	5.0
Hospital insurance..	2.7
Supplementary medical insurance...	10.9

1/ Fiscal year 1971.
2/ Strictly speaking, Medicare has no premiums.   The figures presented are administrative cost plus benefits paid, which would be equivalent, actuarially, to premiums paid.

SOURCE: Health Insurance Institute, *1972-73 Source Book of Health Insurance Data*, 1973. Marjorie Smith Mueller, "Private Health Insurance in 1971: Health Care Services, Enrollment, and Finances," *Social Security Bulletin*, February 1973, table 13, p. 15. National Underwriter Company, *1973 Argue Chart of Health Insurance*, 1973, p. 112. Data on Medicare from unpublished records of SSA's Bureau of Health Insurance.

CHAPTER 2: SUMMARY AND CONCLUSIONS

Taking into account the unique characteristics of the industry under investigation, we deduced the concept of cost appropriate for the health insurance industry. Chapter 3 reports on a cost model based on rigorous economic theory. The parameters of this model were estimated, using multiple regression techniques, and the results are reported in subsequent chapters. These estimates were based on data obtained for the three types of insurers.

In the empirical analysis we treated the three major providers of health insurance separately because of large differences in the types of services they offer beyond pure health insurance protection. Table 2 provides a functional enumeration of these services. It also illustrates the difficulty, perhaps the impossibility, of making statements about the relative efficiency of the three major providers.

The Commercial Carriers

Chapter 4's analysis of the commercial health insurers is based largely on a sample of 328 health insurers for the period 1968-70. *The most important finding is that there are economies of scale in the administration of commercial health insurance.* As firms become larger, their administrative cost ratio falls. The cost of administering commercial health insurance appears to vary widely, depending on whether the insurance is group or individual and on the volume of insurance written by the company. Individual insurance, with its high selling costs, is much more expensive to administer than group insurance. Indeed, in our sample, the median administrative cost ratio for group health insurance was 18.8 percent, while the comparable figure for individual health insurance was 47.0 percent, or three times greater than for group health insurance.

A smaller sample of the largest health insurance companies, taken from the annual statements filed with the District of Columbia Insurance Commission by all insurance companies operating in the District, explains the striking difference in cost ratios: while commissions on group health average only 2.7 percent of premiums, on most individual health coverage they average around 20 percent. General insurance expenses are also much higher for individual than for group health insurance. An analysis of variance applied to the smaller sample indicates that there is no systematic difference in the commission structure of the largest commercial health insurers, but comparable analyses of variance applied to total administrative expenses and general insurance operating expenses indicate systematic differences.

Another way of examining administrative costs is to view them over time. During 1965-70, *commercial* health insurance administrative expenses

per insuree increased annually by 5.1 percent; premiums earned and claims costs per insuree increased at average annual rates of 6 and 7.5 percent. The slower rate of increase in administrative costs is to be expected because the factors affecting inflation in administering the insurance industry are markedly different from those affecting inflation in the medical care market.

Our empirical results explain, in part, the structure of the commercial health insurance industry. The 26 largest insurers write 70 and 40 percent of the group and 40 percent of the individual commercial health business, while the smaller, high-cost firms write the rest. This type of industry structure is consistent with economies of scale. If there are large economies of scale in the provision of health insurance, it seems difficult to explain how the small, high-cost companies can remain in business.

One possible explanation is that consumers are atomized, insurance packages are difficult to understand, and no form of unit-pricing exists. Thus, the market for individual insurance and small group plans can easily become a sellers' market in which a large amount of product differentiation occurs and price per "unit of insurance" is incomprehensible to the would-be insurer and becomes a secondary factor in his evaulation of the product being sold. The company relies on a large sales force to seek out individual insurers and small groups and create or find a health insurance package tailormade to the "needs" of the small group or individual. The high commission structure suggests that health insurance protection is not often easy to sell. Larger purchasers of group health insurance have specialists who can seek out the large, low-cost commercial health insurance companies and who know exactly what they are buying. In general, nonprice competition is at least partly offsetting, and product differentiation is one such form of nonprice competition that can be, and possibly is, overdone.

Ultimately the question of whether there is too much product proliferation by the commercial health insurers reduces itself to the question of consumer sovereignty: if the multiplicity of policies offered actually hinders freedom of consumer choice and confuses him, the outcome of the competitive process has been inefficient in providing health insurance because of increased claims-handling and selling costs. Moreover, it is inefficient in the consumption of health insurance because of consumer befuddlement. But, if, the consumer actually wants and needs a large variety of health insurance protection, the commercial insurers are offering a valuable service whose price enters into their administrative costs, thus making their costs *appear* higher than the costs for the service of the Blues or Medicare.

Blue Cross-Blue Shield

Chapter 5 analyzes the administrative costs of Blue Cross and Blue Shield. In that chapter we focus most of our attention on the Blues' regular business. A more detailed examination of their performance as intermediaries and carriers under Medicare is reserved from chapter 6. Because Blue Cross plans primarily provide hospital insurance and Blue Shield medical-surgical protection, we analyzed each separately.

We used two concepts of average administrative costs for the Blue Cross-Blue Shield operations. First: total administrative costs divided by benefits paid plus administrative costs. Second: total number of enrollees. [1] The explanatory variables fell into two main categories: size-related variables and product-mix variables. Using the number of claims paid as an indicator of size, we estimated cost functions with the size variable entered linearly and quadratically.

Given our results for the commercial health insurers, we fully expected to find scale economies. In fact, we did not. The nonprofit organizational form has not resulted in cost-minimizing behavior on the part of the Blues. This result is at odds with most theories of the firm that consider alternatives to profit-maximizing behavior. Most formulations hold that there is always an incentive to minimize unit costs in the pursuit of maximizing the objective function. The only explanation for not minimizing costs arises from not requiring enough output from any given set of inputs because of the incentive structure in this particular group of nonprofit institutions.

Although we have found some supporting evidence for the hypothesis that cost-minimizing behavior does not take place, we looked for further support in the evolution of the Blues' organizational form. Specifically one would expect that economies should be achieved by merging Blue Cross and Blue Shield in simultaneous operations. The reason for the supposed economies lies in the economies of scale that could be achieved by computerized operations plus the removal of duplication in the executive suite and in advertising. By estimating the same cost function as before and using a dummy variable for the effectively merged operation, we could focus on the effect of the merged operation. Depending on the definition of average administrative cost employed, merging appears to reduce costs by 20-25 percent. The fact that the merged organizational form is more efficient and less commonly observed further supports the idea that the Blues are not cost-minimizers.

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[1] Used to capture the non-bill-paying aspects of providing health insurance.

The Medicare Program

Chapter 6 contains the analysis of Medicare administrative costs. Because Medicare is administered by two entities, the Federal Government and the carriers and intermediaries, we examined both sets of administrators. Furthermore, because Medicare has two parts--Part A, the hospital insurance plan, and Part B, the supplementary medical insurance plan--we have analyzed each separately.

Government administration of Medicare ranges from investigations conducted by the Secret Service of the U.S. Treasury Department on the forgery of Government checks to the large staff maintained by the Social Security Administration to perform such functions as data-processing, operating district offices, and reimbursing carriers and intermediaries. Analysis of how costs are allocated between Parts A and B and how they are imputed to various parts of the operation, both directly and indirectly, indicates that generally acceptable and sound accounting procedures are used. In fact, there is no reason to believe that there is any difference in the way Medicare's direct and indirect costs are imputed from the way a firm such as General Motors imputs costs between, say, its Frigidaire and Chevrolet divisions.

The principal economic reason an insurer would want to become an intermediary or carrier under Medicare has to do with economies of scale: if a firm can achieve greater economies in expanding its volume of business by taking on Medicare beneficiaries, it will do so. Furthermore, firms can become more competitive in their regular business by allocating as much of their regular business administrative costs as possible to Medicare administrative costs. Because Medicare reimburses the intermediaries and carriers at cost for the administrative functions which they perform, the intermediaries and carriers have an incentive to maximize Medicare administrative costs rather than minimize them. More work needs to be done on the particular problem of perverse incentives, but there is a large literature on the defense industry, in which cost and cost-plus contracting were employed extensively, indicating that management does take the line of least resistance and yields to the incentive to maximize not minimize costs. 2/

We attempted to estimate separate cost functions for Medicare, Part A, and Part-B functions with multivariate regression analysis. Given the fact that Medicare provides an incentive to maximize adminstrative costs, we did not expect to be able to estimate successful cost functions for the intermediaries and carriers. Our two principal dependent variables were Medicare administrative costs divided by Medicare benefit payments plus administrative costs and Medicare administrative costs divided by the number of bills paid. The independent variables used were related

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2/ Documented in chapter 6.

to firm size, bill-type characteristics, and per capita income. We also tried using independent variables related to Medicare beneficiaries such as percentage who were over age 65, black, and below the poverty level; characteristics such as average bed size of hospitals, percentage of teaching hospitals, and State and local government hospitals; and physician characteristics. None of these independent variables explained variations in Medicare administrative costs very well.

One paradoxical finding in the Part-A regression model is that, after holding all other variables constant, firm size proved to be positively related to the level of administrative costs. One interpretation of the positive sign of the size coefficient is that large intermediaries are less efficient than small intermediaries. This interpretation is difficult to accept because studies of other parts of the insurance industry disclose economies of scale. Clearly, further research must be done on this issue.

The Medicare, Part B, regression results indicate that the commercial carriers have lower operating costs than their Blue Shield counterparts. Further, there is some statistical evidence that, of the four different computing systems presently used, the electronic data-processing (EDS) is the least costly. (See chapter 6, page 91, for a description of these systems.)

Throughout the analysis we compared the three insuring entities solely on the basis of cost ratios. While the cost ratio is useful for many analytic purposes, say, to run regression analysis on each separate group of insurers, it is not useful for comparison. As is pointed out early in chapter 2 and in chapter 3, the types of service which each entity offers are so materially different that comparing administrative cost ratios is akin to the proverbial comparison of apples and oranges.

All three insuring entities offer pure health insurance protection first and then many other services. Table 2 indicates how diverse these services are by breaking them down by function, revealing the amount of diversity involved. It would be helpful in an analysis like ours to know what a "basic" service package, over and above the insurance, "ought" to be and what it "ought" to cost on the basis of, say, time-motion studies. Then it would be possible to remove all of the fringe services from each insuring entity's package of services and compare the costs of all three insuring entities' "basic" service packages with each other, or with the costs of a model basic package determined by time-motion studies. But economics and accounting have not yet reached that degree of analytical sophistication in dealing with the service industry.

TABLE 2.--Comparison of administrative activities of the three major providers of health insurance [1]

Description	Medicare	Blue Cross-Blue Shield and commercial insurers	
		Group plans	Individual insurance
Enrollment.............................	Determination of eligibility based on age and insured status under social security. Informational activities directed toward aged population with relatively low educational background. Individual enrollment under Part A and individual voluntary enrollment under Part B.	Performed by employer through employment office. No eligibility requirements. Employee easy to reach. Plans tailored to each employer's particular needs and requirements.	Extensive network of salemen w sell policies, maintain them, and provide aid to insurees in the claims process. Large amount of resources given to i formation activities such as a vertising. Large variety of kinds of protection offered to insurees.
Collection of premiums..................	Individual collection of Part-B premium from persons not receiving cash benefits.	Payroll deductions at employer's expense.	Insuree billed annually or semiannually for the insurance provided him.
Assistance to claimants.................	Assistance provided through social security office for enrollment and claims to aged population.	Provided by employer or by mail.	Provided by mail or by salesman broker, or agent.
Certification of providers.............	Enforcement of provisions designed to assure health, safety, and quality of care; applies to hospitals, nursing homes, diagnostic laboratories, and other providers.	Enrollment of participating providers by Blues. No enforcement powers.	Enrollment of participating pro viders by Blues. No enforcemen powers.
Scrutinizing of claims..................	Maintain profiles of physicians' fees.	Some companies beginning to maintain physician fee and provider charge profiles. Blues apparently more active than commercial carriers.	Some companies beginning to maintain physician fee and provider charge files. Blues apparently more active than commercial carriers.
Civil rights...........................	Enforcement of civil rights provisions of title VI, 1964 act, for providers of service, carriers, and intermediaries.	Obliged to adhere to civil rights provisions of title VI, 1964 act.	Obliged to adhere to civil rights provisions of title VI, 1964 act.
Records and reports.....................	Necessity for public accountability requires considerable reporting.	Necessary for internal purposes, tax purposes, and State regulatory agencies. Annual statement must be filed in each State where business is done. Blues must justify rate increases to State insurance commissions.	Necessary for internal purposes, tax purposes, and State regulatory agencies. Annual statement must be filed in each State where business is done. Blues must justify rate increases to State insurance commissions.
Evaluation and research................	Continuous study and evaluation of programs. General research on medical care costs and delivery.	Commercial insurers participate in a number of associations such as the Health Insurance Association of America and the Health Insurance Institute which publish comparative data and follow industry trends. Blue Cross-Blue Shield collects data at national headquarters and disseminates comparative data to member plans.	Commercial insurers participate in a number of associations such as the Health Association of America and the Health Insurance Institute which publish comparative data and follow industry trends. Blue Cross-Blue Shield collects data at national headquarters and disseminates comparative data to member plans.
Employment practices....................	Cooperation with national policy to hire the handicapped and special efforts to hire the disadvantaged.	Variable among carriers.	Variable among carriers.
Public policy..........................	Acts as agent in enforcement of price commission regulations.	Blues provide a certain amount of income redistribution by using community rating. Commercial insurers and Blues provide insurance for certain persons and groups who would otherwise lack protection.	Blues provide a certain amount of income redistribution by using community rating. Commercial insurers and Blues provide insurance for certain persons who would otherwise lack protection.

[1] Based on work by Saul Waldman of SSA's Office of Research and Statistics.

CHAPTER 3: THE CONCEPT OF COST

Analysis of administrative costs in health insurance is beset with the problem of variations in output. 1/ Different types of insurance policies involve different costs in selling and processing claims. Even claims processing is far more complex than the mere clerical function since resources are often allocated to checking provider charges and reviewing the appropriateness of utilization. Selling and claims-processing costs vary with the nature of the insurance policy and company decisions as to how thoroughly to perform these functions. 2/ Although the payment of claims is the major function performed by health insurance organizations, it is not the sole function. Administrative costs are incurred in providing all the services offered by the health insurer. For example, the individual consumer may be interested in more than comparable coverage when considering various insurance policies. One insurance firm may offer better services than another. If the consumer knows that he can obtain services at any hour of the day or night from one firm, he may be willing to pay more for its policy because he is buying the service differential too. In addition, an individual might purchase health insurance at a higher price from a particular firm because the firm supports causes in which he believes such as community service. In this instance the consumer is purchasing more than health insurance; he is also investing in his community or engaging in philanthrophy.

Given the diverse activities, services, and interest of health-insuring organizations in the United States, an empirical investigation of the relative efficiency of health insurers would need to give empirical content to a formulation such as the following:

$$(1) \quad A = 1 - \frac{c + s + r}{P}$$

In this formulation c represents claims payments (the pure insurance component); s, the monetary costs of providing the services the purchase buys along with his insurance; r, the return on invested capital necessary to keep the firm's resources in the industry; and P, premiums paid. A becomes the proportion of total premiums paid that covers the administrative costs of the pure health insurance. Since this expression

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1/ Appendix A contains a technical exposition of the theory of cost.

2/ An investment of resources in claims auditing ought to bring a return in lower benefit payments. Chapter 6 shows that Medicare auditing-costs have increased considerably for this very reason.

isolates the proportion used to administer the pure insurance function, it is the relevant parameter for comparability. This expression explicitly factors out the value of s for the different health insurance organizations. It is imperative that this be done to hold constant the diverse functions performed so that attention can be focused solely on how much it costs the various organizations to perform their health insurance function.

In practice, however, the task of isolating s for each insuring organization and assigning to it a monetary value poses many conceptual and empirical difficulties. For example, s in Medicare consists of provider certification, civil rights enforcement, and preventive measures against medical cost inflation. Blue Cross-Blue Shield tries community rating and thus redistributes income from the well to the sick; it further tries to monitor cost increases on the part of providers, which is an investment for policyholders. Commercial insurers provide a great amount of diversity in plans to give the consumer a wide range of choice; commercial insurers also provide multiple lines of insurance to make it more convenient to meet all insurance needs at one point.

All of these diverse functions could be considered as contained in s because, to a greater or lesser degree, they are services purchased *with* health insurance. Isolating the monetary values of these functions is no mean feat, given the vagaries of cost-accounting procedures and the arbitrary allocation of overhead items. To the extent that one fails to properly cost these functions for inclusion in expression (1), a bias is introduced into the value of A. If the costs of services are overstated, the firm appears more efficient in its administrative function. Conversely, if such costs are understated, the firm appears less efficient. One might speculate that the costs of these diverse services would often be understated. If so, the firm that provides fewer auxilliary services will appear more efficient--a conclusion that may well be spurious.

As an indication of the operating results of the commercial insurance firms, the cost ratios most commonly used are "expenses incurred as a percentage of premiums written" 3/ and "claims incurred as a percentage of premiums earned." These two ratios are combined to provide an indication of the operating results of the commercial companies. 4/

3/ A distinction is made between "premiums written" and "premiums earned" because commercial insurance premiums are generally paid on an annual basis by the consumer. Premiums are "earned" as the policy provides protection over time. Thus, if a consumer pays $300 for a health insurance policy on January 1, his insurance company had premiums written of $300 and premiums earned of 0. By July 1 premiums written would still be $300 and premiums earned would be $150.

4/ See National Underwriter Company, *1971 Argus Chart of Health Insurance* (Cincinnati: The Company, 1971).

The rationale for expressing expenses incurred as a percentage of premiums written rather than premiums earned is that commissions and other acquisition and field supervision costs are dependent primarily on *writing* the policies. 5/ In contrast, claims expenses are incurred as premiums are being earned.

Table 3 gives the operating results of the 50 largest commercial health insurers in 1971. In most cases the combined ratios exceed 100 percent, which indicates that the insurers incurred "under-writing losses," that is, claims incurred plus operating expenses exceed premiums earned. This does not necessarily mean that the companies did not make a profit on their health insurance business, because investment income is not included and the "claims incurred" column may be arbitrarily changed, depending on adjustment of incurred loss reserves. 6/

For comparability, the expenses incurred in the delivery of health insurance must be expressed in relation to some other variable common to the commercial insurers, Blue Cross-Blue Shield, and Medicare. The usual practice is to use premiums earned (or earned subscription income for the Blues) as the base when comparing the performance of commercial insurers or the Blues. With Medicare, however, there are no comparable premium payments. 7/ Because Medicare is a Government program it should theoretically always break even, revenues equaling the sum of operating costs and claims. Thus, a Medicare base comparable to premiums earned could be the operating costs plus claims. Such a formulation, however, will overstate Medicare's administrative expenses on a ratio basis, comparable to those ratios contained in table 3, because premiums earned for the Blues and the commercials contain slack for claims, plus additions to reserves plus a "profit." This overstatement severely handicaps this measure because it would not be right to conclude that Medicare was less efficient simply because no "profit" was earned or because no slack was built into the base to build up reserves. 8/

5/ Louis S. Reed, *Financial Experiences of Health Insurance Organizations in the United States* (Washington: Social Security Administration, Office of Research and Statistics), Research Report No. 12, 1965, p. 39.

6/ Premiums earned and claims incurred are kept on an accrual basis by the companies. Because there is no way to precisely know the amount of claims incurred until they are submitted for payment, the companies estimate the amount of claims incurred and place them in an incurred loss reserve. The funds in this reserve are included in the "claims incurred" column. In the past 10 years, the incurred loss reserve has increased as a percentage of premiums earned.

7/ The Medicare recipient does pay a premium under Part B of the program, but his premium in no way reflects the actuarial expectation of his group's loss because Medicare is subsidized intergenerationally through the general fund.

8/ This is not to say that Medicare lacks reserves. In fact, its reserves number in the billions, but they do not require slack in the base.

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As a result of the structural differences in the health insurance organizations, there is no appropriate measure for comparison. Premiums earned cannot be used as a base because Medicare does not have premiums. A substitute for premiums earned for Medicare might be claims plus administrative costs. This measure, however, usually overstates Medicare's administrative costs relative to the commercial companies and the Blues. If claims only are used as the base for all three insuring organizations, the costs of performing the insurance function will often be overstated for the organizations providing the broadest range of services besides insurance.

Further difficulties arise because not all administrative costs are explicit, that is, are not compensated in cash. As an illustration, all other conditions being equal, a country in which all wives engage in market work will have a larger GNP than a country in which all wives work in their homes. Although wives in both countries might expend the same amount of energy in their work, wives in the market country receive cash remuneration, which enters into the definition of GNP, but those who work in the home receive none and their work is not counted as part of the national output, given GNP's definition. Clearly, a comparison of the two GNP's would be misleading without an accurate measure of the real amount of output in a country in which all wives work in the home. In measuring the cost of delivering health insurance, a similar pitfall must be avoided.

The cost of delivering health insurance includes not only the cash administrative costs borne by the provider of the insurance but also those real (but nonpecuniary) costs incurred by persons who must fill out claims forms and perform other nonreimbursed tasks. Furthermore, it is necessary to distinguish between costs to the individual policyholder and costs to third parties. For example, the commercial insurers underwrite an unspecified number of group health insurance contracts in which all or varying amounts of the administrative work is done by the insuree's employer. The costs to the employer of administering these insurance plans are unavailable. Also, physicians, hospitals, and patients perform part of the administrative work of health insurance. There are no reliable estimates of the amounts of time they spend on claims forms, but it must be considerable. 9/ This is only important if there are differences in the size of these costs among groups of insurers. There is evidence, however, that this is so because of the reporting (or filling) requirements of the different firms.

9/ In 1971, 69 percent of all physicians gave some time to working on insurance forms. Of them 10 percent spent 5 hours or more per week, 16 percent spent 3 to 4 hours, and 74 percent spent 1 to 2 hours. See Arthur Owens, "Time Well Spent? New Norms Will Help You See," *Medical Economics*, Dec. 6, 1971.

In a period of rising prices, the comparison of ratios alone conceals tradeoffs which may be made in an insuring organization. Breaking even or making a profit is a function of premiums collected, claims paid, and administrative costs. If, on the one hand, claims cost are high and rise at high rates and the demand for insurance is relatively inelastic, premium rates may be raised and administrative costs kept constant. If, on the other, the insuring organization tries to monitor claims, resist inflation, and control the quality of services which its insurees receive, it may not have to raise premium rates. Its administrative costs, however, will probably increase. To frame this point in an analytically more precise form, consider the relationship in equation (2):

$$(2) \qquad B = P - (A + C)$$

where B is a break-even point or a targeted level of profit, P is premium, A is administrative costs, and C is claims costs. Simple arithmetic demands that the ratios considered earlier will vary widely, depending on which variables the differing insuring organizations used to achieve B. One insurer may be lax on claims review. Consequently, for him C may be relatively high, but his A may be lower because he uses fewer staff members. Another insurer may have a lower C, but his A may be higher because of his extensive use of claims examiners. A third insurer may be able to raise P to compensate for increases in A or C. The insurees of all three insurers may be receiving the same amount of real medical care and real health insurance, but the above-mentioned ratios will differ.

Finally, comparisons of ratios are difficult because the relative size of administrative costs is a function of a number of variables which may differ from organization to organization. Among variables are these:

The age-sex compositions of the insurees, which would lead to a different size for the average claim, a different distribution of claims by claim size, and a different frequency of claim per insuree.

Definition of "claim."

Benefit structures.

Method of reimbursing providers.

The size of the insurer.

The payment or nonpayment of taxes.

The size of selling (or enrollment) costs.

In sum, economic theory would lead us to posit an average cost function of the following form:

(3) $AC=f$ (SERVICES, SIZE, PMIX, AGE, SEX, TAXES, PWORK, QUALITY)

where AC could be defined in a number of ways--one being administrative costs as a percentage of premiums written; another being administrative costs per insuree.

For the independent variables, SERVICES would be an index of the services other than the pure health insurance provided, and SIZE would be a variable measuring the size of the insurer and could be defined as premium volume or number of insurees. We would expect a positive relation between SERVICES and AC and an inverse relation between SIZE and AC. Because insurers offer such a large array of policies, PMIX would be a product mix variable or a number of product mix variables. One measure of product mix could be the amount of group insurance offered as a percentage of total insurance offered; another could be a set of dummy variables measuring the number of different deductibles and coinsurance rates offered by each insurer; and still another could be the number of different policies offered by the insurer. The more diverse the product mix, the higher would we expect AC to be.

AGE and SEX would be variables indicating the influence of the insurer's customers on its costs. 10/ TAXES would measure the differential effect of how each insurer is taxed and how taxation affects his average costs. SALES would be a variable measuring the extent of the selling effort of the insurer. One measure of this variable could be the percent of total costs that selling costs represent. We would expect selling costs to be directly related to AC. PWORK would be an estimate of the total work effort involved in the insurance transaction that was done by persons outside the insuring organization. We would expect an inverse relation between this variable and AC. QUALITY would be a variable measuring the concertedness of the claims-review process. We would expect that an insurer who was careful about the validity of the claims presented to him would have a higher AC than one who was careless. One measure of QUALITY might be the amount of time spent on each claim multiplied by the salary of the claims examiner. If empirical data were available for all of these variables for all insurers, a regression equation could standardize for each of these influences on administrative costs and enable us to estimate the *net* effect of each independent variable on AC for all insurers.

In the chapters which follow, we will try to estimate separate average costs functions for the three major insuring entities. Average cost implies that costs be presented in reference to output. For example, if we were to estimate average cost funtions for the steel industry, production costs would be measured per metric ton of steel or per some other

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10/ It is well known that the initial planners of Medicare realized that insuring the aged presents problems of information and comprehension.

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tangible measure of output. One of the reasons that economists have neglected the service sector of the economy has been this: the output of the service sector is not tangible and is, consequently, difficult to conceptualize and measure.

The most visible output which the health insurance industry produces is risk abatement. The industry sells contingent claims against future losses of wealth to persons due to morbidity and pays those claims. It also sells other services such as information. Therefore, the ideal measure of output for the industry would be the amount of claims payments plus the real value of the other services which it provides--the amount of protection against risk and the ancillary services provided. 11/

This information is not available. Data on the amounts of claims paid are published, but data on the value of other services provided are not. A possible proxy measure of health insurance output would be the total sales of the industry, which is premiums written, but this measure over-states output because it includes profits and additions to reserves. It could be argued that profits are not output, although additions to re-serves might be viewed as output because they safeguard the future viabil-ity of making claims payments. But it could also be argued that profits are a part of output because in a competitive industry profits are normal profits and thus a return to capital. The measure of national output, GNP, contains profits. If claims payments alone are used as a measure of output, output is understated because the value of services provided other than risk abatement is not included.

A third possible measure of output would be claims payments plus adminis-trative costs. The rationale for using this measure is that the amount of administrative costs captures the value of all of the services pro-vided by the insurer over and above risk abatement. The problem with this measure is that there is no way of knowing whether a high value for it means that a producer is supplying more services or better quality services or is merely inefficient relative to a producer having a low value for this measure. If competition does not produce equal efficiency

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11/ Even this measure is not ideal for any point in time and the reason it is not illustrates the difficulties in measuring output for service industries. Take two insurers who are identical in every re-spect. Given the randomness of morbidity, Insurer A must pay a large claim at one point while Insurer B pays none. Is Insurer A producing more output than Insurer B? By the measure of output in the text, he is. Yet both insurers have accepted contingent claims and are really supplying identical outputs. Here the relevant concept of output would be premiums paid minus that portion of premiums paid as profits to the insurers. In a wider time-frame, no conceptual difficulty arises be-cause claims paid plus the real value of services rendered ought to ex-actly equal premiums paid less profits for all insurers.

in all insurers, this measure will bias output in favor of the inefficient. In spite of the limitations of this third concept of output, we have chosen it as the best possible one, given the data available.

By definition, average cost equals production costs divided by output. For health insurance, production costs are administrative costs; they represent the value of the real resources consumed in the production of the output. The output of the industry is claims payments plus other services whose value can be represented by administrative costs. Therefore, our average cost variable may be represented as follows:

(a) Average cost=administrative costs/(claims payment+administrative costs)

Alternative specifications of the average cost variable would be these:

(b) Average cost=administrative costs/claims payments

(c) Average cost=administrative costs/premiums written. 12/

In the chapters which follow we report only those equations which use (a) or variants of it. However, when we used (b) or (c), our basic results did not change.

12/ For Blue Cross-Blue Shield the denominator of (c) would be earned subscription income; for Medicare, the total expenditures.

TABLE 3.—Operating experience, 50 largest commercial health insurers, 1971

Insurer	Premiums written (in thousands)	Premiums earned (in thousands)	Claims incurred (in thousands)	Expenses incurred (in thousands)	Claims incurred to premiums written	Expenses incurred to premiums written	Combined (5)+(6)
Aetna Life and Casualty.........	1,121,654	1,072,317	977,336	115,709	91.1	10.3	101.4
Travelers.......................	1,026,270	986,336	889,346	109,879	90.2	10.7	100.9
Metropolitan Life...............	894,496	865,385	768,584	138,449	88.8	15.5	104.3
Prudential......................	861,617	856,329	726,032	141,117	84.8	16.4	101.2
Equitable Society...............	620,671	613,415	560,491	77,528	91.4	12.5	103.9
Connecticut General Life........	578,009	562,479	515,444	66,983	91.6	11.6	103.2
Mutual of Omaha.................	498,811	492,527	354,288	129,945	71.9	26.1	98.0
CNA/Insurance...................	460,950	458,413	352,727	110,351	76.9	23.9	100.8
John Hancock Mutual Life........	338,237	338,215	298,660	49,775	88.3	14.7	103.0
Provident L and A, Tenn.	288,847	289,610	255,220	35,657	88.1	12.3	100.4
Bankers Life and Casualty.......	253,352	236,982	138,316	85,693	58.4	33.8	92.2
Occidental Life, Calif	249,747	255,939	239,401	27,453	93.5	11.0	104.5
New York Life...................	213,956	208,890	181,879	45,940	87.1	21.5	108.6
Lincoln National Life...........	170,331	168,901	155,353	22,497	92.0	13.2	105.2
Combined Insurance Co...........	164,886	159,972	66,933	70,913	41.8	43.0	84.8
The Union Labor Life............	160,604	160,213	149,709	11,182	93.4	7.0	100.4
Bankers Life Company............	145,108	144,362	125,555	21,523	87.0	14.8	101.8
Washington National.............	144,517	142,881	107,826	38,940	75.5	26.9	102.4
Union Mutual Life, Maine........	119,713	118,396	101,745	20,187	85.9	16.9	102.8
Republic National Life..........	114,528	114,448	103,680	12,873	90.6	11.2	101.8
Pacific Mutual Life.............	114,107	113,916	100,808	15,452	88.5	13.5	102.0
Massachusetts Mutual Life.......	96,310	95,087	80,948	14,072	85.1	14.6	99.7
Hartford Life...................	95,909	88,823	69,985	22,088	78.8	23.0	101.8
General American Life...........	94,112	94,025	82,335	11,922	87.6	12.8	100.4
Allstate........................	90,923	79,432	69,855	11,487	87.9	12.6	100.5
Continental Insurance...........	90,388	92,251	55,686	32,338	60.4	35.8	96.2
United Insurance, Ill...........	86,845	83,838	39,035	41,259	46.6	47.5	94.1
Mutual of New York..............	79,949	77,231	62,421	22,067	80.8	27.6	108.4
Great-West Life.................	74,071	73,015	64,407	12,097	82.2	16.3	104.5
Liberty Mutual..................	73,535	75,450	65,888	8,198	87.3	11.1	98.4
Paul Revere Life................	71,267	68,142	44,247	25,522	64.9	35.8	100.7
Fireman's Fund American Life....	65,137	65,700	52,904	14,867	100.3	22.8	123.1
Pilot Life......................	59,383	59,455	52,748	9,375	88.7	15.8	104.5
Reserve Life, Tex...............	58,965	56,552	30,753	24,891	54.4	42.2	96.6
Physicians Mutual...............	57,743	56,016	36,850	19,310	65.8	33.4	99.2
Benefit Trust Life..............	54,670	54,338	47,783	10,330	87.9	18.9	106.8
National Life and Accident......	52,761	50,283	21,671	27,327	43.1	51.8	94.9
Independent Life and Accident...	50,004	49,678	19,946	21,128	40.2	42.3	82.5
California Western States.......	49,842	50,200	45,136	7,045	89.9	14.1	104.0
Employers Life. Wausau..........	49,605	49,618	45,134	6,421	91.6	12.9	104.5
Guardian Life, N.Y..............	48,790	46,968	35,437	14,382	75.5	29.5	105.0
Confederation Life..............	47,911	47,930	40,249	7,603	84.0	15.9	99.9
Colonial Penn Life..............	47,057	48,247	30,536	7,804	63.3	16.6	79.9
Business Men's Assurance........	46,127	45,705	35,820	10,857	78.4	23.5	101.9
Monarch Life....................	44,784	41,606	26,889	14,113	64.6	31.5	96.1
American National...............	43,160	44,881	31,287	20,902	69.7	48.4	118.1
Pennsylvania Life, Calif........	42,618	39,611	18,992	16,243	47.9	38.1	86.0
Nationwide......................	38,982	38,418	31,076	8,234	80.9	21.1	102.0
American Republic, La...........	38,697	37,213	23,146	15,775	62.2	40.8	103.0
National Casualty...............	37,756	37,155	26,278	12,899	70.7	34.2	104.9

SOURCE: National Underwriters Company, *1972 Argus Chart of Health Insurance*, 1972.

CHAPTER 4: THE COMMERCIAL INSURERS

In 1971 the commercial insurance companies wrote $12.8 billion in acci-
dent and health premiums and accounted for 56 percent of non-Government
health insurance. Of the $9.1 billion in benefits paid, $1.7 billion
was for loss of income. 1/ Both individual and group coverage was offered.
The *1972 Argus Chart of Health Insurance,* issued by the National Under-
writer Company, lists 23 different forms of individual health coverage
and 25 different forms of group health coverage. 2/ The individual and
group policies are listed in table 4.

Administrative Costs

The cost of administering commercial health insurance varies widely, de-
pending on whether the policies involve group or individual insurance.
The volume of insurance written by the company also seems to affect ad-
ministrative costs. Table 5 presents the administrative expense experi-
ence of the largest commercial firms selling health insurance for the
years 1968-70. The ratios are averages for the 3 years, and they are
accompanied by their coefficient of variation. The cell sizes of pre-
mium volume contain about the same amount (column five). For group
health insurance there appears to be a negative correlation between the
size of premium volume and the size of administrative costs, expressed
as a percentage of premiums written. For individual health insurance
the inverse relationship between premium volume and administrative costs
does not appear to be as clear-cut, but the operating ratio does become
smaller as premium volume increases. In no individual health insurance
premium class are administrative expenses as a percentage of premiums
written smaller than the ratios for group health insurance administrative
expenses.

Some of these relationships are not surprising. Because selling costs
are such a large component of individual health insurance costs and be-
cause other costs--for example, claims handling--would be comparable to
group health insurance, the fixed-cost component of individual health
insurance would be proportionately less than for group health insurance.
Because types of operation in which fixed costs are large generally en-
joy economies of scale, greater economies of scale in group health in-
surance than in individual health insurance should be normal. What is

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1/ "Loss of income" also includes payments for accidental death
and dismemberment. See Health Insurance Institute, *1972-73 Source Book
of Health Insurance Data* (New York: The Institute, 1972), p. 40.
2/ National Underwriter Company, *1972 Argus Chart of Health Insur-
ance* (Cincinnati: National Underwriter Company, 1972).

difficult to explain are some of the relatively large coefficients of variation which indicate that in some premium volume classes for group and individual health insurance administrative cost ratios are fairly widely dispersed around the mean. 3/ Some of the firms with larger premium volume show less variation in their administrative costs than some of the smaller premium-volume firms, but no clear-cut pattern emerges.

Tables 6-9 provide a breakdown of the components of administrative costs expressed as a percentage of premiums earned for 26 of the 30 largest health insurers. More detail would be preferable, but the annual statements filed in the District of Columbia and in the individual States only require that the following four categories of administrative expense be listed: total operating expense; taxes, licenses, and fees; general insurance expenses; and net commission. The last three categories are mutually exclusive and are exhaustive subsets of the first. Operating expenses vary widely by company and by type of insurance offered (table 5). Most group insurance is less costly to administer than individual insurance. But, even among these large companies (accounting for 70 percent of the group and 40 percent of the health insurance written in 1971), group operating results vary widely. The data show that the average administrative expenses for noncancelable and guaranteed renewable policies exceed 50 percent. Table 7 indicates that taxes are not a source of variation because taxes as a percentage of premiums earned remain fairly constant by types of insurance and by company. General insurance expenses contribute less to the variation than do commissions, and tables 8 and 9 indicate that the greatest divergence in practice occurs in commissions. Table 8 indicates what commercial insurance administrative expenses as a percentage of premiums might be without taxes and commissions.

Because the underlying internal practices of each individual company are probably consistent across product lines, we can reasonably expect systematic variation of administrative costs by line of business and by company. In other words, if a company has high administrative costs for one or two types of insurance relative to the costs of those kinds of insurance for other companies, its administrative costs for its other lines of insurance probably would be higher relative to those of other companies.

To test this hypothesis, analysis of variance was applied by comparing the administrative costs of the seven different forms of insurance, by company, with each other. The results of this test are contained in table 10. The F statistic which the analysis of variance produces is obtained by dividing the variance among groups by the variance within groups. In

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3/ The dispersion might indicate that all firms are doing well and that some firms are more efficient than others, and possibly some imperfection in the market. An alternative explanation might be that some firms are inframarginal, that is, profits $\gtrless 0$ for firms away from the mean.

applying this statistical test, our reasoning was as follows: if a company administers all forms of individual insurance as inexpensively or as expensively as group insurance, the variance within groups will be low. The variance among groups appears to be large in tables 6-9. A high F statistic would mean that the variance among groups was greater than the variance within groups, confirming the supposition that the 26 health insurance companies have systematic differences in administrative costs. Table 10 indicates that the null hypothesis cannot be rejected 4/ for total operating expenses, general insurance expenses, and net commissions because the F ratios are low--.474, 1.057, and 1.302--and they are only signficant at the .984, .402, and .175 levels.

Regression Analysis

To determine whether economies of scale exist and what independent variables contribute to the variations in commercial administrative costs, a single equation least-squares regression technique was used. This technique is useful because it allows the researcher to fit relationships between a dependent variable such as operating costs and a series of independent variables such as size, product mix, and other factors that influence operating costs. The resultant coefficient of each independent variable reveals the *net* effect of the variables on the dependent variable, holding all other independent variables constant.

A recent analysis of 22 proposed national health insurance bills before the 93d Congress found that 17 include the existing industry to one degree or another. 5/ Its inclusion makes sense because of the industry's expertise and machinery. But, if commercial companies are included, the fundamental problem of allocating the administering responsibility remains. As noted, the average cost of administering health insurance varies widely among the health-insuring organizations. Ideally, designation of responsibility for administering any national health insurance program should be based on efficiency considerations. To the extent that economies of scale are found, centralization in a few firms can be justified. In contrast, if economies of scale are not present, administrative responsibility should be decentralized on efficiency grounds.

To examine whether centralized administration of national health insurance is feasible, we tried to fit average cost functions. As the measure of average administrative costs discussed in chapter 3, we used total

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4/ The null hypothesis states that there in *no* systematic relation between the variations perceived in tables 6-9.
5/ For a full analysis of these proposals, cf. Saul Waldman, *National Health Insurance Proposals: Provision of Bills Introduced in the 93rd Congress as of July 1974* (Washington: Social Security Administration, Office of Research and Statistics, July 1974), DHEW Pub. No. (SSA) 75-11920.

operating costs divided by claims payments plus admistrative costs. Claims payments plus administrative costs was selected as the measure of output size, which is analogous to using dollar sales-volume less profits as a proxy for output. This procedure is strictly legitimate, if output is homogeneous and competitive pressures compel the various firms to charge the same price. 6/

Although we expected the size of the firm to be an important explanatory variable, we recognized that other factors also might be important determinants. In the health insurance industry, a few large firms handle most of the business. In fact, in our sample of 327 firms, the largest 26 firms accounted for some 70 percent of the group health business and 40 percent of the individual health business.

To examine whether the structure of the industry affects the average cost curve, we introduced a dummy variable into the regression equation which assumed a value of 1 if the firm sold over $100 million in premiums. Including this dummy allowed the intercept to vary between large and small firms. 7/ If the coefficient proved statistically significant, it would be added to the intercept term for the large firms. In addition, the slope of the average administrative cost functions may also be different for large as opposed to small firms. To admit this possibility, we included an interaction dummy variable. If this coefficient proved significant, it would be added to the coefficient of the previous dummy. The main purpose of including these shift variables was to account for X-efficiency considerations. Because there was no clear clustering of firms well below the cutoff point of $100 million in premiums, we also tried to fit an average cost function without these two independent variables.

In addition to size-related variables, several other explanatory variables have been included, particularly the effect of group policies. The greater the percentage of total health business accounted for by group business, the lower the firm's administrative costs should be. There are two main factors at work here: The greater the percentage of group business, the less diverse are the administrative functions, which should result in greater efficiencies; and, perhaps more importantly, many group policies provide for the customer to perform much of the administrative work, thus lowering the insurer's costs.

6/ Clearly, product differentiation exists in health insurance policies. An interesting application of the hedonic price index could be made in this industry to help decide whether the market functions smoothly enough to explain price differences by product differentiation.

7/ See David B. Houston and Richard M. Simon, "Economies of Scale in Financial Institutions: A Study in Life Insurance," *Econometrica*, 38, November 1970, pp. 856-64.

The result may not be unambiguous, however, because the greater the percentage of group insurance to total insurance, the more specialized is the firm in group health insurance. But group health insurance is less costly to administer. Thus, there will be a specialization effect plus a group effect. Suppose group insurance as a percentage of total insurance approaches 0. In a linear regression, where AC is average administrative costs, G is group insurance, and T is total insurance, $\dfrac{d(AC)}{d(G/T)} < 0$ implies that an increase in group business will reduce AC. But a G/T close to 0 would indicate specialization in *individual* insurance. Thus, the sign of the coefficient of G/T might change from plus to minus as the ratio changes from low to high values. Because of difficulties in controlling for size of group, which we will more thoroughly discuss shortly, we interpret G/T as a specialization variable in one set of equations.

Specialization generally leads to greater efficiency and, thus, to lower costs. To the extent that a firm specializes in health insurance, its regular employees have a greater opportunity to specialize and its selling strategy could become more concentrated. Thus, it was desirable to include a measure of the extent of specialization in health insurance. Although ideal measures are unavailable, we used health reserves as a percentage of total reserves. 8/ A priori we expected the coefficient to have a negative sign.

A further refinement is possible to control for firm type. The data source classifies the commercial health insurers into four categories: health insurance specialty company, life and health company, casualty company, and multiple line company. A set of dummy variables was included in the regression equation to determine what differential effect company type might have on the dependent variable. 9/ Give the arbitrary classification scheme, it was difficult to allot a priori signs to these coefficients, but we expected the health insurance specialty company to have lower average administrative costs.

Finally, we also included a corporate form dummy variable which assumed the value 1 for stock firms and 0 for mutual firms. Since the firms claim that corporate form makes a difference, it was of interest to determine whether it does. Within our context we expected little, if any,

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8/ It would probably be more desirable to use health premiums written as a percentage of total premiums written. Unfortunately, available data do not include total premiums written for each firm.
9/ By omitting the first firm type, health insurance specialty company, the coefficients on the other dummies measure the differential firm effects for the first firm type.

difference because both type of firms have an incentive to minimize costs. 10/ Presumably, a significant coefficient on this variable would reflect differences in managerial ability.

We have also estimated an average administrative cost function from which the two intercept and slope dummy variables for firms selling in excess of $100 million in premiums and the variable health reserves as a percentage of total reserves were deleted. The two dummies were deleted in the face of no clear clustering. The health reserves variable was deleted because it is a somewhat ambiguous measure of specialization and redundant, given the firm-type dummy variables.

The Data

The data for the regression analysis were taken from the *1971 Argus Chart of Health Insurance*, 11/ which gives detailed data for 327 insurance companies selling health insurance in 1968-70, and were broken down by total health insurance and individual health insurance. Of the original 327 observations, some had to be discarded because of inconsistencies in data reporting. Thus, we were left with a total sample of 307 observations for each year.

Table 11 contains frequency distributions of administrative expenses as a percentage of premiums written for the companies in our sample. The median expense ratio for individual insurance is 47 percent, while the comparable figure for group insurance is 18.8 percent. One can only speculate on the competitive implications of these relatively high expense ratios. Furthermore, one could legitimately question why commercial firms with operating ratios well below the median do not lure business from firms above the median.

One reason the companies with high operating-expense ratios continue in business may lie in the previously used equation,

$$B = P - (A + C),$$

where B is a break-even point or a targeted level of profit; P, premiums; A, administrative costs; and C, claims costs. If a purchaser has a choice between company X and company Y, he may prefer company Y, even though company Y's A/P ratio exceeds that of company X's. This may occur because, as he is in a pool of insurees, his net insurance cost is lower with company Y than with company X; that is, his P is lower because he

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10/ If the sample firms are not cost minimizers, the one cannot assume that the regression will trace out the cost envelope.

11/ National Underwriter Company, *1971 Argus Chart of Health Insurance* (Cincinnati: National Underwriter Company, 1971), 73d annual ed.

is in a group under company Y's policy, Y having much better experience. This may help to explain why Blue Cross-Blue Shield has lost business to the commercials over time. Blue Cross-Blue Shield tried until recently to community rate, and insurers with better experience have left the community pool and gone to the experience-rated pools of the commercials. Thus, company Y and Blue Cross might have the exact absolute amount of A for two given groups of insurees of the same size, but because experience under Blue Cross is so bad, its C is larger. This necessitates a high P and, as a consequence, $\frac{A}{P}$ is smaller for Blue Cross than for company Y.

But insurees are concerned with the costs of insurance, not with A/P ratios as such. Thus, the better risks will tend to leave Blue Cross-Blue Shield. This fact highlights the risks inherent in relying on A/P ratios to the exclusion of other factors. Another reason may be geographic: the low-cost insurers may have failed to penetrate certain geographic areas, and the high-cost insurers are able to maintain regional monopolies because of differences in State premium taxes and State retaliatory taxes. 12/

A final explanation may be that many consumers of health insurance are unaware that price differentials due to differences in administrative costs exist for the same kinds of coverage. 13/ This explanation, however, may not be appropriate for group health insurance. Purchasers of large group policies are more sophisticated than most purchasers of individual health insurance and know what kind of policy they want and at what price. For example, when the United Automobile Workers (UAW) is negotiating for group health insurance for its membership, insurance expertise is used. Leonard Woodcock, UAW president, has testified that health care benefit programs worth in excess of $725 million annually have been negotiated. 14/ Since such benefits are received in lieu of wage increases, it is well worth the UAW's effort to develop and use expertise in negotiations. Price competition in the group business may be one of the reasons the median operating ratio is so much lower for group health insurance than for individual insurance.

12/ For example, Oklahoma levies a 4-percent premium tax on "foreign" (read, "out of State") insurance companies but none on "domestic" insurance companies. And, as a consequence, Oklahoma insurance companies face a 4-percent retaliatory tax in some States. In effect the domestic insurance industry in Oklahoma has a quasimonopoly in Oklahoma and has no incentive to operate in States with a retaliatory tax.

13/ It has been shown that wide differentials exist in prices for similar basic life insurance packages, that consumers are ignorant of these differentials, and that the life insurance companies are opposed to any form of "unit pricing." Cf. Joseph M. Belth, "Statement on Price Competition in the Life Insurance Market," Subcommittee on Antitrust and Monopoly of the U.S. Senate Committee on the Judiciary, February 1973.

14/ See Woodcock's "Statement" before the Antitrust and Monopoly Subcommittee of the Judiciary Committee of the U.S. Senate, May 11, 1972.

Regression Results

The regression results for both variants of the linear and log functional forms are presented in table 12. 15/ Only the results for firm individual business are contained in that table. Intuition suggests that the average size of group covered is positively correlated with premium volume. Table 13 presents additional data that indicate the potential significance of this influence. It shows the administrative costs of various group sizes as a percentage of premiums earned. Clearly, as the size of the group increases, the administrative costs ratio falls rapidly. Thus, it is highly desirable to adjust for differences in the size of groups. But we could not obtain that crucial piece of information and had to follow a different tack. Since we do know what proportion of premiums written by each firm is individual business and what group business, we could estimate a cost function for the individual business. For this portion of the business, group size was held constant at one person and, therefore, the cost curve estimated for the individual business is adequate to establish whether or not economies of scale exist.

Furthermore, examination of table 5 points up clear evidence that the variance falls with firm size, indicating the presence of heteroskedasticity. To test for heteroskedasticity, we regressed the square of the residuals on size and found a statistically significant negative relationship between the two. In cross-section studies of firms or in consumer budget studies, the residual variance usually increases with the size of the firm or with the size of income. 16 Table 5 and our test for heteroskedasticity indicate that the residual variance in our administrative cost data decreases with the size of the firm. We, therefore, assumed that the variance of the disturbance term was proportional to the square root of size, that is, $\lambda_i = \sqrt{X_i}$, using Johnston's notation. 17/ Thus, we transformed the data accordingly and ran ordinary least-squares on it, which was equivalent to using a generalized least-squares estimator. The size variable is highly statistically significant in linear form when the two intercepts, slope dummies, and the health reserves variable are removed. The $\bar{R}^2$ also indicates that the linear form represents a better fit of the data. In all cases in the linear form the size variable has

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15/ Since we have time-series and cross-section observations, we tried to pool our data. This effort proved disappointing. Part of the difficulty lies in our crucial assumption that claims payments plus administrative costs can be used as an output measure. To pool time-series and cross-section data, one must deflate the data. Two problems arise: no single price index is wholly suitable, and insurance rates are set before knowing what medical charges will be. For the latter, one cannot be sure whether even a perfect price index would represent the adjustment factor used by the insurers in setting their rates.

16/ See, for example, Jan Kmenta, *Elements of Econometrics* (New York: Macmillan Company, 1971), pp. 256-69.

17/ J. Johnston, *Econometric Methods* (New York: McGraw Hill Book Company, 1972), 2d ed., pp. 214-17.

the expected negative sign, indicating the presence of scale economies. The slope intercept dummies proved to be insignificant in all of the equations in which they were entered. The generally poor performance of these variables can be explained partly by the lack of a clear clustering of firms above and below the rather arbitrary delineation between large and small firms.

Earlier we discussed the ambiguity inherent in the interpretation of the group insurance-total insurance variable. In the set of equations in table 14, this variable has a negative sign and in most equations is statistically significant. Our interpretation of this result is that firms specializing in individual health insurance do not have lower costs than firms specializing in group health insurance. This interpretation follows from the fact that here our dependent variable is *individual* administrative costs divided by *individual* benefits plus *individual* administrative costs and, therefore, group size effects are not confounded.

Generally, the health specialization variable--health reserves as a percentage of total reserves--did perform well, contrary to our expectations. In nearly all cases, the coefficient was of the expected sign and, in most instances, it was significant.

The firm type variables were generally insignificant except for the life-health dummy in the linear form. Their performance did not change materially by the deletion of the *HR/TR* variable. The signs of the coefficients, however, suggest that the life and health companies were more efficient than the health insurance specialty companies which, in turn, had higher average costs than either the casualty or multiple line companies. But inferences must be very tenuous in the face of little statistical significance. However, the corporate form dummy, S, is positive and statistically significant in most instances. The positive sign of the coefficient indicates that administrative costs are higher for stock companies than for mutual.

Table 14 contains results for the two variants using a quadratic form. Both group and individual businesses are included, and the coefficient of the quadratic term of the size variable indicates whether the cost function is U-shaped and at what point it turns upward. Because size and the square of size are highly correlated, one must evaluate the *marginal* effect of size on cost. We have done this by estimating the coefficients in the quadratic cost function and then testing for the significance of $a + 2b$ where a is the size coefficient and b is the square of the coefficient.

Table 15 presents the size distribution of the commercial insurers, the calculated marginal effects of size over the appropriate range, and the calculated t statistics. As with the regressions run only on the individual business, the size variable in these equations shows economies of scale. In four of the size equations, the quadratic term is statistically significant and positive. The marginal effect of size is negative

over almost the entire range of the commercials, and in the four equations where the quadratic term was statistically significant, the marginal effect of size becomes positive at about $25 X$. The optimal size commercial health insurance firm, from the point of view of administrative efficiency, could have about $1 billion in administrative cost plus benefits paid.

Group health insurance as a percentage of total health insurance is negative and highly statistically significant, indicating that specialization in group health insurance does lower administrative costs. While the coefficient on the dummy variable for the stock-mutual comparison is positive, it is not statistically significant in any equation. Finally, the sign on the coefficients of some of the firm type dummies changes from those in table 12 where the individual health insurance results are presented.

A Survivor Analysis

Objections can be raised to the sort of econometric analysis we have just presented. First, commercial health insurers are multiproduct, multi-input firms. Our kind of estimation implicitly assumes that the cost functions can be separated, which, of course, may not be the case. Second, the great economies that accrue to the insurer as the size of an insured group increases have not been isolated. The data at our disposal did not permit us to hold constant the size of groups. All we could do was control the percentage of total business accounted for by group coverage. Third, one cannot be absolutely sure that the administrative costs of selling have been totally purged from the administrative costs of paying claims, about which we are really concerned.

To confirm our results, we could apply the survivor technique to the commercial health insurance industry. 18/ If our previous results are correct--if economies of scale exist--we should see the size distribution of firms moving toward a smaller number of firms, each of which is much larger. Again, we must point out that we are now looking at one aspect of each insurer, total premium volume, and trying to confirm a result that applies to a much narrower function of the firm.

The survivor analysis is a simple way to determine the optimum size (or sizes) for a firm in a particular industry. Basically, all we need do

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18/ For a modern discussion and early application of the survivor technique, see George J. Stigler, "The Economies of Scale," *Journal of Law and Economics*, October 1958, pp. 54-71. Subsequent applications are contained in Thomas R. Saving, "Estimation of Optimum Size of Plant by the Survivor Technique," *Quarterly Journal of Economics*, November 1961, pp. 569-607, and Leonard Weiss, "The Survivor Technique and the Extent of Suboptimal Capacity," *Journal of Political Economy*, June 1974, pp. 246-61.

is separate an industry into size classes and observe which classes have expanding populations and which have contracting populations over time. Those with shrinking populations are relatively inefficient and as a result are not surviving. We suspected that there are economies of scale in volume sold by firms in the larger size categories to increase relative to sales by firms in the smaller categories. Moreover, the size distribution of firms should change so that more firms fall in the larger categories and fewer in the smaller. The failure of the survivor results to accord with these expectations, however, does not prove categorically that economies of scale are lacking in administering health insurance, though it may prove that the survivor analysis was applied inappropriately. An insurance firm is a complex operation. Even if scale economies exist in administering health insurance, offsetting factors could still prevent such scale economies from dominating the survivor analysis.

Argus premium data for selected years between 1958 and 1973 were deflated by the medical care component of the CPI using 1958 as the base. Immediately, this posed a problem: we did not have an ideal deflator. While we would have liked to ascertain the *real* coverage purchased by insurees, we could not do it exactly. Health insurance policies ordinarily do not cover all costs included in the medical care price index. For example, dental fees, optometric fees, and costs of eyeglasses are not ordinarily covered. Their absence held the index down in recent years; but physician fees and hospital room rates pulled the index up. Ideally, we needed an index that accurately reflected the changes in the costs of items covered by the insurance policies. Without it our data have an upward bias because the premium volume could not be properly deflated.

We constructed eight size classes for the commercial health insurance industry. See tables 16-18. Table 16 shows the size distribution of the firms for selected years. Each entry in the table shows the percentage of all firms in our sample that fall into a particular firm size as measured by premium volume deflated to 1958 dollars. Table 17 presents the distribution of market shares by firm size. Each entry shows the percentage of the total premium volume sold by all firms in that particular firm size. Thus, the data in tables 16 and 17 can be combined to yield such information as the following: although 34.71 percent of all commercial health insurers were in the less than $5 million bracket, they sold only 3.1 percent of the total health insurance. Table 18 contains comparisons involving relative changes in the size distribution of firms. The middle size ranges, that is, the second through fifth classes, show fairly consistent expansion in the number of firms, indicative of relative efficiency.

The last three size classes, though not consistent, still show increases. The only size class to show a loss was the first. Since there was significant entry during 1958-73, this result is worth noting: entry has occurred at the larger size categories. The statistical significant of the change in the size distribution of firms is summarized in table 19. The

χ^2 distribution is used to test the statistical significance of the change in the overall size distribution of commercial insurers. The null hypothesis is that there is no change in the year to year size distributions of commercial insurers. Since the critical χ^2 value is 21.7 for statistical significance of 0.01, the size distribution of insurers in 1973 was significantly different statistically from that in every other year. Comparing the 1958 and 1973 distributions, only the smallest and the largest (except one) size class experienced a reduced representation.

The statistical significance of changes in isolated size classes can be determined with the χ^2 distribution. In this case we focused on each size class in turn--and treated the others as a single class (table 20). Again, the null hypothesis is that no change occurred in the distribution. Since the critical χ^2-value for statistical significance of 0.01 is only 6.635 for this case, it is quite clear that all size classes exhibit highly significant changes except for the $160-320 million class. We have no ready explanation for this strange exception.

As a matter of fact, the survivor analysis does not offer very strong support for our ex ante supposition that economies of scale are present in administering health insurance. It seems to indicate that there are constant returns to scale over a quite wide range. There are two points to be made in this connection. First, as pointed out, administering health insurance is only one of many functions performed by a complex firm. In addition, some of the effects of scale economies on industry structure may be masked by the great increase recently in the demand for health insurance. The premium volume for selected years is shown in table 21. All values are expressed in 1958 dollars. The 1973 demand was more than 250 percent of 1958's. Substantially increased demand allows entry in spite of scale economies. Thus, while we expected the results to be skewed to the larger categories, we did not find opposite results.

Administrative Costs Over Time

Another perspective for the analysis of administrative costs is to examine them over time. In a period of rapidly rising per capita health care costs--an exact description of the United States in the last 10 years-- per capita insurance claims costs should increase at about the same rate

because such claims reflect those rapidly escalating costs. 19/ But administrative costs per capita should not necessarily rise at the same rate. The factors influencing inflation in the health care sector appear to be unique to that sector. 20/ Because the commercial health insurance industry has many of the characteristics of the service industries within the economy, we should expect inflation in the insurance industry to move at the same rate as in the rest of the service sector. A priori reasoning also suggests that administrative costs per insuree would not go up so rapidly as claims costs per insuree. An envelope and a stamp are required for a claim payment whether that payment is for $1,000 or $100. Thus, if the number of claims per insuree remains relatively constant, while the size of claims increases because of inflation in the health care sector, administrative costs per insuree ought to increase at a slower rate. Table 22 illustrates actual experience for the commercial health insurance industry as a whole for the period 1965-70. 21/ It shows that administrative expenses per insuree increased by 30.6 percent between 1965 and 1970, while claims costs and premiums earned increased by 44.7 percent and 36.0 percent. The average annual rate of increase in administrative expenses was 5.1 percent, while the average annual rate of increase of all items in the consumer price index for the same period was 3.9 percent. Claims costs per insuree went up at an average annual rate of 7.5 percent, while the medical care component of the consumer price index went up at an average annual rate of 5.8 percent and the hospital room rate component by 14.6 percent. 22/

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19/ True except to the extent that there are schedules for claims, for example, indemnity plans have maximum pay for physician charges and room rates. But over time these schedules increase, so that even with indemnity plans, claims payments should follow increases in medical care costs with a lag.

20/ See Martin S. Feldstein, "Hospital Cost Inflation: A Study of Non-profit Price Dynamics," *American Economic Review,* December 1971, pp. 853-73; *The Rising Cost of Hospital Care* (Washington: Information Resource Press, 1971), and "The Rising Price of Physician's Services," *Review of Economics and Statistics,* May 1970, pp. 121-33; Victor R. Fuchs, "The Basic Forces Influencing the Costs of Medical Care," in National Conference on Medical Costs, Washington, D.C., June 27-28, 1967, Report (Washington: U.S. Govt. Print. Off., 1967) pp. 16-31. Karen Davis, "Theories of Hospital Inflation: Some Empirical Evidence," *Journal of Human Resources,* Spring 1973, pp. 181-201.

21/ Unfortunately, data company-by-company could not be obtained.

22/ During the same period, three other components of CPI listed by the Bureau of Labor Statistics under "financial and miscellaneous personal expenses" went up at the following average annual rates: (1) bank service charges, checking accounts, 1.8 percent; (2) legal services, short form will, 5.8 percent; (3) funeral expenses, adult, 3 percent. U.S. Dept. of Labor, Bureau of Labor Statistics, *Handbook of Labor Statistics,* 1972 (Washington: U.S. Govt. Print. Off., 1972), table 127, p. 293.

Because there are no published data available on the number of claims for commercial insurance during this period, it is not possible to ascertain whether this average annual increase in administrative costs, which is greater than the average annual increase in the "all items" component of the CPI, is due to increased claims or to other factors. The "other factors" would include increased costs of claims handling and claims review as well as increased selling costs.

Available statistical information on the commercial insurance industry makes it impossible to isolate all of the factors that control the level of administrative costs. Operating-cost ratios for the commercial insurance companies are higher than those for Blue Cross-Blue Shield or for Medicare. As explained, however, this does not necessarily imply that the commercial companies are less efficient. The commercial companies, with their more varied benefit structure, have higher claims handling costs. From a social point of view, the benefits of a wider range of consumer choice may make up for the higher costs of claims handling. 23/ It might be argued that selling costs are excessive, but, again, a portion of those selling costs contained in commissions is payment for the services of an agent or broker, services which one might not obtain from Blue Cross-Blue Shield or from Medicare. Another portion relates to advertising and informing the public.

Finally, it must be noted that the payment of the claim itself moves through a number of steps whose costs are not included in the administrative costs outlined above. From society's point of view, these are costs which someone must bear. For most bills, when there is nonassignment, 24/ the provider bills the patient, and the patient supplies the provider with a partly filled-out insurance claim form. The provider completes the claim form and returns it to the patient, who, in turn, submits it to his insurance company. The insurance company pays the patient and the patient pays the provider. The final payment of the bill involves six separate steps, each with its own costs, some of which are not explicitly counted as administrative costs.

23/ In fact, since the purchasers of the differentiated product pay the price, one might conclude that the benefits are greater than the costs. But this idea is too simplistic. To the extent that the market contains imperfections, product differentiation is a nonprice variable. Thus, the product differentiation may shift demand less than it shifts costs. The implication is that product differentiation is extended beyond the socially optimal level. If one concurs with Lancaster's theory of product differentiation, imperfect competition is not needed for product differentiation. See Kelvin Lancaster, "Change and Innovation in the Technology of Consumption," *American Economic Review,* May 1966, pp. 14-23, and "A New Approach to Consumer Theory," *Journal of Political Economy,* April 1966, pp. 132-57.

24/ Assignment means that the provider bills the insurance company directly. One might argue that the administrative costs associated with nonassignment are reflected in lower premiums.

Conclusions

The primary purpose of the analysis of the commercial insurance carriers was to investigate the possibility of economies of scale in the administration of commercial health insurance. In fitting one linear and two nonlinear forms for average administrative costs, we found strong evidence of scale economies. From a conceptual standpoint, we recalled a problem that plagues all economies of scale studies: what appears to be scale efficiency may well be X-efficiency. In other words, the larger firms may have better management reflected in their lower costs. From the point of view of public policy, however, this distinction is not very important because our econometric analysis indicates that the administrative function should be centralized.

We sought further confirmation that economies of scale exist in the administration of commercial health insurance by employing a survivor analysis. Since the presence of scale economies should lead to increases in concentration, we expected the survivor analysis to reveal a marked tendency for growth in the larger firm size brackets and contraction in the smaller brackets. The survivor analysis showed all size classes to be growing except the smallest and the second largest. This result, no doubt, is due to the very large increase in real demand for health care insurance between 1958 and 1973. While the survivor analysis does not contradict the presence of scale economies, it does not provide strong support for their presence.

TABLE 4.--Coverage of health insurance contracts written

Individual coverage	Group coverage
Accident only	Association (under master contract)
Automobile accident	Business overhead expense (associa-
Aviation accident	tion)
Business overhead expense	Campers
Optionally renewable	Credit unions, blanket
Credit installment	Credit installment, blanket
Dental	Dental
Guaranteed renewable (adjustable	Diagnostic service
premium)	Employee
Hospital-surgical	Franchise
Major medical	Hospital and surgical
Loss of time	Loss of time
Hospital and surgical	Long-term disability
Loss of time	Major medical
Major medical	Medical expense (regular)
Medical expense (regular)	Nursing home care
Monthly premium	Poliomyelitis-specified disease
Mortgage protection	Reinsurance
Newspaper accident	Schoolchildren, blanket
Noncancelable	Small group (under 25 persons)
Hospital-surgical	Sports teams
Major medical	Statutory disability, California
Loss of time	Statutory disability, New Jersey
Poliomyelitis-specified disease	Statutory disability, New York
Railroad installment	Students, blanket
Reinsurance	Transportation, blanket
Specified rates	Volunteer firemen, blanket
Substandard (premium rated)	
Travel, limited	
Weekly premium, industrial	

SOURCE: National Underwriter Company, *1971 Argus Chart of Health Insurance*, 1971.

TABLE 5.--Administrative expense ratios and coefficients of variation, commercial health insurers, 1968-70

Premium volume (in thousands)	Number of firms	Administrative costs/ premiums mean ratio (percent)	Coefficient of variation	Total premium volume in size class (in thousands)
		Individual insurance		
0-$4,162..................	173	51.5	.51	293,316
$4,163-$7,650.............	50	46.1	.24	339,200
$7,651-$13,800............	29	47.8	.15	253,166
$13,801-$25,000...........	17	45.8	.16	320,714
$25,001-$41,000...........	9	42.4	.18	316,814
$41,001-$60,000...........	7	45.9	.13	298,993
$60,001-$120,000.........	4	40.9	.18	301,459
$120,001-$150,000........	2	43.4	.05	296,737
$150,001-$200,000........	2	37.8	.13	295,743
$200,001-$300,000........	1	36.0	0	297,700
		Group insurance		
0-$18,000................	197	24.5	.65	894,953
$18,001-$57,000..........	31	16.5	.37	768,213
$57,001-$132,000.........	12	12.7	.17	1,168,914
$132,001-$300,000........	6	11.2	.52	880,084
$300,001-$500,000........	2	10.9	.06	1,081,825
$500,001-$700,000........	2	9.4	.05	1,012,912
$700,001-$850,000........	1	8.8	0	982,600
$850,001-$950,000........	1	9.6	0	985,784

SOURCE: National Underwriter Company, *1971 Argus Chart of Health Insurance*, 1971.

TABLE 6.--Total operating expenses as a percentage of premiums after dividends, by type of insurance and company, 1971

Company	All forms of health insurance	Group accident and health	Collectively renewable	Non-cancelable	Guaranteed renewable	Non-renewable for stated reasons	Other accident	All Other
Aetna Life and Casualty..........	10.8	9.6	64.9	85.1	53.0	9.6	39.9	33.6
Travelers........................	11.1	8.9	29.4	53.8	51.0	18.4	38.0	56.2
Metropolitan Life................	16.0	9.8	47.7	58.4	48.0	33.7	42.7	31.7
Prudential.......................	16.5	10.3	20.9	51.4	47.9	24.5	47.6	16.6
Equitable Society................	12.6	10.7	NONE	72.9	77.3	33.2	NONE	NONE
Connecticut General Life.........	11.9	10.8	45.9	58.8	54.1	18.1	37.6	19.8
Mutual of Omaha..................	26.4	9.0	32.0	24.2	38.6	34.8	51.0	39.3
John Hancock Mutual Life.........	14.7	10.8	NONE	67.6	60.3	NONE	NONE	22.4
Provident Life and Accident, Tenn.....	12.3	7.9	37.6	57.2	55.7	35.5	61.6	34.1
Bankers Life and Casualty........	36.2	8.1	37.6	102.1	40.5	54.5	35.1	21.4
Occidental Life, Calif...........	11.0	8.0	43.0	70.0	56.0	49.0	30.0	37.0
New York Life....................	22.0	15.5	26.7	50.4	44.7	26.6	33.4	31.4
Lincoln National Life............	13.3	9.9	62.3	49.7	49.3	NONE	49.2	24.4
Combined Insurance Company.......	44.3	33.6	45.1	NONE	45.1	45.1	45.1	45.1
Union Labor Life.................	7.0	6.8	NONE	NONE	64.4	NONE	NONE	NONE
Bankers Life Company.............	36.2	8.1	37.6	102.1	40.5	59.5	35.1	21.4
Washington National..............	27.2	11.6	50.0	40.5	55.6	56.4	52.5	60.4
Union Mutual Life, Me......	17.1	13.8	30.9	62.7	51.7	NONE	NONE	NONE
Republic National Life.......... o	11.0	9.0	41.0	65.0	53.0	48.0	51.0	53.0
Pacific Mutual Life..............	14.0	10.0	NONE	NONE	52.0	NONE	46.0	39.0
General American Life............	11.8	9.7	8.7	45.8	46.7	54.2	53.7	15.5
United Insurance, Ill............	49.2	19.7	NONE	51.2	92.0	48.4	50.6	53.6
Allstate........................	14.5	8.1	NONE	NONE	109.2	NONE	33.0	70.5
Continental Insurance............	24.1	20.5	26.8	53.3	46.6	40.8	28.9	30.2
Mutual of New York...............	28.6	19.7	39.2	54.3	54.3	16.3	NONE	NONE
Great West Life..................	15.6	13.6	NONE	78.6	72.0	NONE	38.3	46.5
Average..................	19.8	12.1	38.3	61.6	56.1	37.2	42.9	36.5

SOURCE: Annual statement of each company filed at the D. C. Department of Insurance. The form in which these data are reported reflects each company's national experience, not merely experience in the District of Columbia. .

TABLE 7.--Taxes, licenses, and fees as a percentage of premiums after dividends, by type of insurance and company, 1971

Company	All forms of health insurance	Group accident and health	Collectively renewable	Non-cancelable	Guaranteed renewable	Non-renewable for stated reasons	Other accident	All Other
Aetna Life and Casualty...............	2.6	2.6	3.5	4.3	3.4	1.9	2.8	3.2
Travelers.............................	2.5	2.5	2.7	3.6	3.3	2.9	2.6	4.8
Metropolitan Life....................	2.8	2.6	3.5	4.5	3.8	3.4	3.6	2.8
Prudential...........................	2.5	2.3	2.5	3.7	3.5	3.7	NONE	3.3
Equitable Society....................	2.7	2.6	NONE	4.9	5.8	4.3	NONE	NONE
Connecticut General Life.............	2.4	2.4	1.8	3.8	3.5	2.3	2.2	2.7
Mutual of Omaha......................	2.4	2.2	2.6	3.4	2.5	2.5	3.1	2.2
John Hancock Mutual Life.............	2.4	2.3	NONE	4.7	4.2	NONE	NONE	2.0
Provident Life and Accident, Tenn. ...	2.3	2.2	2.6	2.9	3.1	2.8	2.5	2.5
Bankers Life and Casualty............	2.8	1.6	2.8	2.8	3.0	NONE	2.8	2.9
Occidental Life, Calif...............	2.0	2.0	3.0	4.0	3.0	2.0	3.0	3.0
New York Life.......................	2.8	2.6	3.3	3.9	3.7	3.6	3.4	3.3
Lincoln National Life................	2.3	2.2	3.2	0.8	3.2	NONE	2.0	2.7
Combined Insurance Company...........	2.6	2.6	2.6	NONE	2.6	2.6	2.6	2.6
Union Labor Life.....	2.4	2.4	NONE	NONE	3.3	NONE	NONE	NONE
Bankers Life Company.................	2.8	1.6	2.8	2.8	3.0	NONE	2.8	2.9
Washington National..................	2.4	1.9	2.9	3.1	3.1	3.1	3.1	4.3
Union Mutual Life, Me................	2.3	2.2	2.4	2.7	3.1	NONE	NONE	NONE
Republic National Life...............	2.0	2.0	2.0	3.0	3.0	2.0	1.0	2.0
Pacific Mutual Life..................	3.0	3.0	NONE	NONE	3.0	NONE	3.0	3.0
General American Life................	2.1	2.2	2.6	2.3	2.1	2.5	2.4	1.0
United Insurance, Ill...............	3.1	0.4	NONE	3.7	4.5	2.6	2.7	3.6
Allstate.............................	3.1	2.7	NONE	NONE	9.4	NONE	2.8	4.7
Continental Insurance................	2.5	2.4	2.6	2.8	2.8	2.6	2.6	2.6
Mutual of New York...................	2.8	2.4	2.2	4.4	3.9	4.6	NONE	NONE
Great West Life......................	2.3	2.2	NONE	3.9	4.3	NONE	3.9	4.2
Average..............................	2.5	2.2	2.7	3.5	3.6	2.9	2.7	3.0

SOURCE: Annual statement of each company filed at the D. C. Department of Insurance. The form in which these data are reported reflects each company's national experience, not merely experience in the District of Columbia.

TABLE 8.--General insurance expenses as a percentage of premiums after dividends, by type of insurance and company, 1971

Company	All forms of health insurance	Group accident and health	Collectively renewable	Non-cancelable	Guaranteed renewable	Non-renewable for stated reasons	Other accident	All other
Aetna Life and Casualty..............	6.6	5.9	45.8	51.2	34.5	7.8	16.5	17.3
Travelers.......................	6.6	5.2	14.6	24.7	29.4	13.4	19.6	37.7
Metropolitan Life...................	10.8	7.0	28.4	34.8	31.3	23.6	34.5	21.4
Prudential..........................	9.9	6.4	10.5	31.6	27.5	21.3	8.6	13.3
Equitable Society...................	8.4	6.9	NONE	52.5	53.0	28.7	NONE	NONE
Commercial General Life.............	7.0	6.4	NONE	33.5	33.6	9.6	12.7	14.7
Mutual of Omaha.....................	11.3	4.7	15.9	12.6	15.0	16.9	14.4	16.0
John Hancock Mutual Life............	10.0	7.5	NONE	42.8	38.2	NONE	NONE	21.4
Provident Life and Accident, Tenn...	6.5	4.5	20.3	24.3	26.3	18.7	21.4	20.6
Bankers Life and Casualty...........	17.5	6.4	13.9	63.9	18.7	NONE	28.9	13.3
Occidental Life, Calif..............	6.0	4.0	30.0	39.0	33.0	34.0	14.0	19.0
New York Life......................	13.7	9.3	13.7	33.3	29.5	23.1	23.2	21.4
Lincoln National Life..............	6.0	4.5	38.6	18.8	24.4	NONE	14.6	11.8
Combined Insurance Company..........	19.2	24.4	18.6	NONE	18.6	18.6	18.6	18.6
Union Labor Life....................	3.8	3.6	NONE	NONE	58.6	NONE	NONE	NONE
Bankers Life Company................	17.5	6.4	13.9	63.9	18.7	0	28.9	13.3
Washington National................	15.9	7.6	32.1	30.7	30.8	30.6	32.3	29.3
Union Mutual Life, Me...............	8.2	6.4	12.5	32.6	29.1	NONE	NONE	NONE
Republic National Life..............	6.0	5.0	20.0	28.0	26.0	24.0	11.0	23.0
Pacific Mutual Life.................	9.0	6.0	NONE	NONE	35.0	NONE	30.0	29.0
General American Life...............	7.2	6.3	6.1	19.2	23.1	24.3	24.9	6.2
United Insurance, Ill...............	15.9	4.3	NONE	17.5	25.9	14.8	15.4	17.8
Allstate...........................	8.0	5.0	NONE	NONE	55.3	NONE	16.9	27.7
Continental Insurance...............	12.2	11.4	11.7	26.9	24.4	15.3	11.2	11.9
Mutual of New York..................	17.4	12.2	23.8	31.3	33.3	11.8	NONE	NONE
Great West Life.....................	8.7	7.0	NONE	53.6	49.8	NONE	33.0	42.6
Average............................	10.4	7.1	20.6	34.9	31.7	19.8	20.5	20.3

SOURCE: Annual statement of each company filed at the D. C. Department of Insurance. The form in which these data are reported reflects each company's national experience, not merely experience in the District of Columbia.

TABLE 9.--Net commissions as a percentage of premiums after dividends, by type of insurance and company, 1971

Company	All forms of health insurance	Group accident and health	Collectively renewable	Non-cancelable	Guaranteed renewable	Non-renewable for stated reasons	Other accident	All other
Aetna Life and Casualty........	1.6	1.2	15.5	29.6	15.1	NONE	20.6	13.1
Travelers.....................	2.0	1.1	12.2	25.5	18.3	2.1	15.8	13.6
Metropolitan Life.............	2.3	0.1	15.6	18.9	12.7	6.5	3.8	7.3
Prudential....................	4.1	1.6	7.9	16.1	16.9	.5	39.0	NONE
Equitable Society.............	1.6	1.1	NONE	15.5	18.5	.3	NONE	NONE
Commercial General Life.......	2.5	2.1	44.2	21.5	17.0	6.3	22.8	2.5
Mutual of Omaha...............	12.6	2.1	13.5	8.2	21.0	15.5	33.6	21.1
John Hancock Mutual Life......	2.3	1.0	NONE	20.1	17.9	NONE	NONE	NONE
Provident Life and Accident, Tenn...	3.5	1.2	14.7	30.0	26.3	14.0	37.7	10.9
Bankers Life and Casualty.....	15.9	.2	20.9	35.4	18.8	54.5	3.4	5.1
Occidental Life, Calif........	3.0	2.0	10.0	27.0	19.0	13.0	13.0	15.0
New York Life.................	5.4	3.6	9.8	13.3	11.6	NONE	6.9	6.7
Lincoln National Life.........	5.0	3.2	20.5	28.1	21.7	NONE	32.5	9.8
Combined Insurance Company....	22.5	6.6	23.9	NONE	23.9	23.9	23.9	24.0
Union Labor Life..............	.8	.8	NONE	NONE	2.5	NONE	NONE	NONE
Bankers Life Company..........	15.9	.2	20.9	35.4	18.8	54.5	3.4	5.1
Washington National...........	8.9	2.1	15.1	6.7	21.7	22.7	17.1	26.8
Union Mutual Life, Me.........	6.6	5.2	16.0	27.4	19.5	NONE	NONE	NONE
Republic National Life........	3.0	2.0	18.0	34.0	24.0	22.0	39.0	27.0
Pacific Mutual Life...........	2.0	1.0	NONE	NONE	14.0	NONE	13.0	7.0
General American Life.........	2.5	1.2	0.0	24.3	21.5	27.4	26.4	8.3
United Insurance, Ill.........	30.2	15.0	NONE	30.1	61.6	31.1	32.4	32.3
Allstate......................	3.4	.4	NONE	NONE	44.5	NONE	13.3	38.1
Continental Insurance.........	9.4	6.7	12.5	23.6	19.4	22.9	15.1	15.7
Mutual of New York............	8.3	5.1	13.3	18.6	17.1	NONE	NONE	NONE
Great West Life...............	4.6	4.4	NONE	21.1	17.9	NONE	1.4	-0.3
Average.......................	6.9	2.7	16.9	23.2	20.8	19.8	19.7	14.5

SOURCE: Annual statement of each company filed at the D. C. Department of Insurance. The form in which these data are reported reflect each company's national experience, not merely experience in the District of Columbia.

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TABLE 10.--Analysis of variance, operating expense ratios for 26 of largest health insurers, 1971

Type of operating expense as a percent of premiums earned	Sum of squares	Mean square	Degress of freedom	F-RATIO	Significance level
Total operating expenses					
Between groups......................	556,776	22,271	25	.474	.984
Within groups......................	6,065,437	47,019	129		
General insurance expenses					
Between groups......................	446,408	17,856	25	1.057	.402
Within groups......................	2,128,085	16,890	126		
Net commissions					
Between groups......................	455,756	18,230	25	1.302	.175
Within groups......................	1,721,569	13,996	123		

SOURCE: Tables 6-9.

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TABLE 11.--Frequency distribution of administrative expenses as a percentage of premiums written, commercial insurers, 1968-70

Administrative expenses as a percent of premiums written	Number of insurance companies	
	Individual	Group
0-4.9.....................................	0	4
5-9.9.....................................	0	28
10-14.9...................................	2	51
15-19.9...................................	2	59
20-24.9...................................	6	41
25-29.9...................................	5	21
30-34.9...................................	23	17
35-39.9...................................	29	11
40-44.9...................................	59	9
45-49.9...................................	57	1
50-54.9...................................	48	5
55-59.9...................................	24	5
60-64.9...................................	22	1
65-69.9...................................	9	1
70-74.9...................................	4	1
75-79.9...................................	3	0
80-84.9...................................	0	0
85-89.9...................................	0	0
90-94.9...................................	0	0
95-99.9...................................	1	0
100 and over.............................	4	1
Totals...........................	298	256

Individual insurance
  Mode = 40-44.9%
  Median 1/ = 47%
  Mean = 48.9%

Group insurance
  Mode - 15-19.9%
  Median 1/ = 18.8%
  Mean = 22.3%

1/ Estimated by formula:

Md=lower limit of Md class+Md class interval x $\dfrac{\text{required number}}{\text{frequency of Md class}}$

SOURCE: National Underwriter Company, 1971 Argus Chart of Health Insurance, 1971.

TABLE 12.--Regression results: 1/ Individual insurance, dependent variable=administrative costs=administrative costs/(benefit payment+administrative costs)

Independent variables	Linear form									Log form		
	2/ 1968	2/ 1969	3/ 1970	1968	1969	1970	1968	1969	1970	1968	1969	1970
Benefit payments plus administrative costs...	-.209-06 (1.136)	-.210-06 (1.412)	-.544-06 (3.542)	-.505-06 (18.298)	-.402-06 (14.312)	-.351-06 (11.519)	.010+00 (.775)	.014+00 (1.121)	-.333-03 (.027)	.701-02 (.555)	.101-01 (.806)	.105-01 (.861)
Dummy=1 if firm sells in excess of $100 million in premiums...	.426+04 (.717)	.444+01 (.001)	.235+04 (.388)				.313+01 (.639)	.148+01 (.286)	.659+01 (.980)			
Dummy=1xf (benefits+ administrative costs) if sales exceed $100 million in premiums...	-.806-01 (1.312)	-.325-01 (.661)	.559-01 (1.011)				.313+01 (.706)	.148+01 (.355)	.659+01 (1.007)			
Group health insurance as a percentage of total health premium..	-.102-03 (.891)	-.234-03 (2.279)	-.559-03 (6.265)	-.395-03 (3.964)	-.542-03 (5.829)	-.477-03 (4.737)	-.129-03 (.644)	-.329-04 (.166)	-.300-03 (1.556)	-.502-07 (4.865)	-.535-07 (2.523)	-.522-07 (2.474)
Dummy=1 if firm is a stock company...	.135+03 (.463)	.166+03 (1.840)	.335+03 (3.286)	.168+03 (1.816)	.208+03 (2.178)	.261+03 (2.360)	.115+00 (2.300)	.119+00 (2.362)	.103+00 (1.962)	.109+00 (2.168)	.110+00 (2.165)	.922-01 (1.753)
Health reserves as a percentage of total reserves...	-.504-03 (3.855)	-.680-03 (5.843)	-.132-03 (.959)				-.760-03 (2.436)	-.967-03 (3.129)	-.546-03 (1.955)			
Dummy=1 if life and health company...	-.775+03 (3.385)	-.732+03 (3.271)	-.806+03 (3.239)	-.957+03 (4.055)	-.105+04 (4.341)	-.132+04 (4.888)	-.142+00 (1.842)	-.975-01 (1.244)	-.183+00 (2.421)	-.128+00 (1.692)	-.754-01 (.978)	-.160+00 (2.137)
Dummy=1 if casualty company...	-.175+03 (.630)	-.255+03 (.939)	-.212+03 (.658)	-.216+03 (.740)	-.352+03 (1.173)	-.542+03 (1.500)	-.996-01 (.995)	-.274-01 (.271)	-.164-01 (.149)	-.148+00 (1.563)	-.941-01 (.979)	-.387-01 (.376)
Dummy=1 if multiple line company...	-.845+02 (.183)	-.116+03 (.258)	-.185+03 (.004)	-.359+02 (.073)	-.309+02 (.061)	-.719+02 (.126)	-.937-01 (.587)	-.367+00 (2.271)	-.102+00 (.626)	-.763-01 (.474)	-.338+00 (2.065)	-.659-01 (.406)
Constant...	.511+00 (49.370)	.516+00 (55.046)	.492+00 (41.833)	.502+00 (64.234)	.499+00 (66.435)	.497+00 (62.223)	.464+00 (8.653)	.448+00 (8.377)	.504+00	.451+00 (9.171)	.436+00 (8.892)	.439+00 (9.067)
Corrected R^2...	.99	.99	.99	.99	.99	.99	.95	.95	.95	.95	.95	.95
Mean of dependent variable...	.428+04	.459+04	.495+04	.428+04	.459+04	.495+04	.162+01	.163+01	.167+01	.162+01	.163+01	.167+01
SY...	.112+04	.110+04	.123+04	.120+04	.123+04	.140+04	.382+00	.387+00	.389+00	.386+00	.392+00	.389+00

1/ The 1t1 values are given in parentheses below each estimate.
2/ Results based on 304 observations.
3/ Results based on 300 observations.

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TABLE 13.--Cost of group medical expense insurance, by size of case, United States, 1971

Size of case (number of lives)	Group administrative costs as a percent of net premiums earned			
	Total	Premium taxes	Commissions	All other
250................................	8.7	2.1	1.5	5.1
500................................	7.9	2.1	1.1	4.7
1,000..............................	7.0	2.1	0.7	4.2
2,500..............................	6.2	2.1	0.4	3.7
10,000.............................	5.3	2.1	0.2	3.0
50,000.............................	5.0	2.1	0.1	2.8

SOURCE: Health Insurance Association of America, survey of 14 insurance companies which wrote 52 percent of group health insurance in the United States in 1970.

TABLE 14.--Regression results, 1/ group and individual insurance combined, dependent variable=administrative costs/(benefit payments and administrative costs)

Independent variables	Quadratic form					
	1968 2/	1969 2/	1970 2/	1968	1969	1970
Benefit payments plus administrative costs.....	-.594-06 (5.029)	-.325-06 (3.612)	-.124-06 (2.520)	-.120-06 (2.960)	-.857-07 (2.589)	-.101-06 (5.820)
Square of benefit payments plus administrative costs.....	.369-12 (4.100)	.160-12 (2.684)	.576-13 (2.004)	.240-13 (.612)	.454-14 (.166)	.403-13 (3.138)
Dummy=1 if firm sells in excess of $100 million in premiums.....	-.207+05 (4.725)	-.120+05 (2.952)	.355+03 (.125)			
Dummy=1 if (benefits and administrative costs) sales exceed $100 million in premiums.....	.158+00 (4.093)	.987-01 (2.837)	.971-02 (.446)			
Group health insurance as a percentage of total health premiums.....	-.272-02 (26.698)	-.287-02 (27.169)	-.307-02 (42.912)	-.286-02 (27.453)	-.306-02 (27.150)	-.304-02 (42.620)
Dummy=1 if firm is a stock company.....	.199+03 (.898)	.353+03 (1.421)	.534+03 (2.755)	.231+03 (.952)	.217+03 (.791)	.500+03 (2.689)
Health reserves as a percentage of total reserves.....	.358-03 (4.206)	.495+03 (5.782)	-.181-03 (2.781)			
Dummy=1 if life and health company.....	.168+04 (3.092)	.221+04 (3.610)	.109+04 (2.403)	.288+04 (4.929)	.359+04 (5.402)	.889+03 (1.966)
Dummy=1 if casualty company.....	-.166+04 (2.510)	-.188+04 (2.545)	-.103+04 (1.826)	-.139+04 (1.897)	-.163+04 (1.950)	-.120+04 (2.115)
Dummy=1 if multiple line company.....	.446+03 (.399)	.621+03 (.497)	.231+03 (.242)	.548+03 (.442)	.470+03 (.333)	.230+03 (.239)
Constant.....	.461+00 (30.456)	.437+00 (29.282)	.457+00 (45.775)	.463+00 (36.582)	.467+00 (37.854)	.451+00 (63.543)
Mean of dependent variable.....	.764+04	.854+04	.882+04	.764+04	.854+04	.882+04
Sy.....	.272+04	.304+04	.233+04	.303+04	.345+04	.235+04
Corrected R^2.....	.98	.98	.99	.98	.98	.99

1/ The 1t1 values are given in parentheses below each estimate.
2/ Results based on 307 observations.

TABLE 15A.--Marginal effects of size on average cost, 1968-70

Size distribution of commercial insurers

SIZE (administrative costs plus bene- fits paid) (in thousands)	Number of firms		
	1968	1969	1970
$1-$4.999...............	119	103	87
$5,000-$9,999..........	71	74	77
$10,000-$19,999........	42	51	60
$20,000-$39,999........	32	32	32
$40,000-$79,999........	19	21	22
$80,000-$159,999.......	8	9	10
$160,000-$319,999......	3	4	7
$320,000 and over......	8	8	7
Mean size ($\bar{X}$).....	34,241	39,000	42,458

TABLE 15B.--Marginal effects of size on average cost, 1968-70

Size	Effect of size					
	1968	1969	1970	1968	1969	1970
.01X̄	-.594-06 (5.03)	-.325-06 (3.61)	-.124-06 (2.52)	-.120-06 (2.96)	-.857-07 (2.59)	-.101-06 (5.82)
.05X̄	-.593-06 (5.03)	-.325-06 (3.61)	-.123-06 (2.52)	-.120-06 (2.97)	-.856-07 (2.60)	-.100-06 (5.83)
.10X̄	-.591-06 (5.03)	-.324-06 (3.62)	-.123-06 (2.52)	-.120-06 (2.97)	-.856-07 (2.60)	-.100-06 (5.84)
.25X̄	-.588-06 (5.04)	-.322-06 (3.62)	-.122-06 (2.53)	-.119-06 (3.00)	-.856-07 (2.63)	-.998-07 (5.86)
.50X̄	-.581-06 (5.05)	-.319-06 (3.64)	-.121-06 (2.53)	-.119-06 (3.04)	-.855-07 (2.67)	-.989-07 (5.90)
X̄	-.569-06 (5.08)	-.313-06 (3.66)	-.119-06 (2.55)	-.118-06 (3.12)	-.853-07 (2.75)	-.972-07 (5.99)
2X̄	-.543-06 (5.13)	-.300-06 (3.72)	-.114-06 (2.57)	-.116-06 (3.31)	-.850-07 (2.94)	-.938-07 (6.18)
4X̄	-.493-06 (5.26)	-.276-06 (3.84)	-.104-06 (2.64)	-.113-06 (3.77)	-.842-07 (3.39)	-.869-07 (6.64)
8X̄	-.392-06 (5.64)	-.226-06 (4.22)	-.844-07 (2.83)	-.107-06 (5.33)	-.828-07 (4.91)	-.732-07 (8.11)
12X̄	-.291-06 (6.35)	-.176-06 (4.95)	-.649-07 (3.16)	-.100-06 (8.86)	-.814-07 (8.15)	-.596-07 (10.90)
24X̄	.124-07 (.362)	-.263-07 (1.05)	-.615-08 (4.94)	-.803-07 (3.040)	-.771-07 (3.75)	-.185-07 (1.82)
36X̄	.290-06 (2.911)	.111-06 (1.50)	.477-07 (1.27)	-.622-07 (1.127)	-.732-07 (1.69)	.192-07 (.882)
Y=a+2bX(000)	804,878	1,015,625	1,068,966	2,500,000	9,522,222	1,262,500
Longest firm	813,575	945,220	1,031,268	813,575	945,220	1,031,268

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TABLE 16.--Size distribution of firms, 1/ selected years, 1958-75

(firm size in thousands)

Year	0-4,999	5,000-9,999	10,000-19,999	20,000-39,999	40,000-79,999	80,000-159,000	160,000-319,999	320,000 +	Number of firms
1958.........	61.702	13.298	9.043	7.979	3.191	2.128	2.128	.532	188
1960.........	54.315	18.274	10.660	8.122	3.046	2.030	2.030	1.523	197
1963.........	49.770	20.737	11.521	7.834	3.687	2,765	1.382	2.304	217
1965.........	42.137	18.943	14.097	10.132	4.405	1.762	1.762	1.762	227
1968.........	49.511	21.173	11.401	7.166	4.886	1.629	2.932	1.303	307
1969.........	47.557	22.150	11.075	7.818	4.886	2.280	2.932	1.303	307
1970.........	46.254	22.150	12.704	7.492	4.235	4.235	.977	1.954	307
1973.........	34.708	23.024	18.213	12.371	4.467	3.436	1.718	2.062	291

1/ Each entry shows the percentage of all firms in our sample that fall into a particular firm size measured by premium volume deflated to 1958 dollars.

TABLE 17.--Distribution of percentage market share of premium volume 1/

(in thousands)

Year	0-4,999	5,000-9,999	10,000-19,999	20,000-39,999	40,000-79,999	80,000-159,999	160,000-319,999	320,000 +	All (percent)
1958.........	7.818 (116)	5.767 (25)	7.127 (17)	12.688 (15)	10.413 (6)	13.546 (4)	30.796 (4)	11.845 (1)	100
1960.........	5.489 (107)	5.580 (36)	6.547 (21)	10.040 (16)	7.466 (6)	9.290 (4)	21.910 (4)	33.678 (3)	100
1963.........	5.090 (108)	6.352 (45)	6.673 (25)	9.291 (17)	7.747 (8)	12.658 (6)	14.383 (3)	37.807 (5)	100
1965.........	4.854 (117)	5.866 (43)	7.888 (32)	12.308 (23)	10.419 (10)	8.790 (4)	17.076 (4)	32.818 (4)	100
1968.........	5.038 (152)	6.075 (65)	6.875 (35)	8.026 (22)	11.092 (15)	7.187 (5)	28.738 (9)	26.967 (4)	100
1969.........	4.788 (146)	6.034 (68)	6.221 (34)	8.130 (24)	10.364 (15)	9.147 (7)	28.770 (9)	26.547 (4)	100
1970.........	4.805 (142)	6.270 (68)	7.059 (39)	7.848 (23)	8.788 (13)	20.172 (13)	8.418 (3)	36.641 (6)	100
1973.........	3.096 (101)	5.777 (67)	8.765 (53)	11.941 (36)	8.217 (13)	12.671 (10)	13.971 (5)	35.563 (6)	100

1/ Numbers in parentheses indicate number of firms in size category. Each entry shows the percentage of total premium volume sold by firms in that particular size category.

TABLE 18.--Relative changes in size distribution 1/

Year	Firm size, by number of firms (in thousands)							
	0-4,999	5,000-9,999	10,000-19,999	20,000-39,999	40,000-79,999	80,000-159,999	160,000-319,999	320,000 plus
1958............	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1960............	.91	1.44	1.24	1.07	1.00	1.00	1.00	3.00
1963............	.92	1.80	1.47	1.13	1.33	1.50	.75	5.00
1965............	1.00	1.72	1.88	1.53	1.67	1.00	1.00	4.00
1968............	1.31	2.60	2.06	1.47	2.50	1.25	2.25	4.00
1969............	1.26	2.72	2.00	1.60	2.50	1.75	2.25	4.00
1970............	1.22	2.72	2.29	1.53	2.17	3.25	.75	6.00
1973............	.87	2.68	3.12	2.40	2.17	2.50	1.25	6.00

1/ Entry shows ratio of firms in time t to firms in 1958, by size category.

TABLE 19.--X^2 statistics 1/ for null hypotheses on change in size distribution of firms

$$P(21.7 < X^2 > \infty) = 0.01$$

Year	1958	1960	1963	1965	1968	1969	1970	1973
1958............	0.0	6.28	16.98	21.96	55.25	56.94	61.64	76.99
1960............		0.0	4.81	8.90	42.12	42.83	45.96	54.20
1963............			0.0	5.10	30.60	29.75	28.37	37.02
1965............				0.0	25.72	25.50	27.00	27.13
1968............					0.0	1.15	19.19	44.04
1969............						0.0	16.54	35.95
1970............							0.0	26.75
1973............								0.0

1/ Computed as $\Sigma(O-E)^2/E$.

TABLE 20.--x^2 test of significance, by size category, 1958 and 1973. [1]

(in thousands)

Size	x^2
0-4,999...............................	952.07
5,000-9,999...........................	210.63
10,000-19,999.........................	195.62
20,000-39,999.........................	98.00
40,000-79,999.........................	30.15
80,000-159,999........................	28.80
160,000-319,999.......................	1.60
320,000 and over......................	33.33

[1] For one degree of freedom, the critical x^2 value for statistical significance of 0.01 is 6.635.

TABLE 21.--Premium volume, commercial insurers, selected years [1]

Year	Premium volume (in thousands)
1958.................................	$3,240,419
1960.................................	4,415,142
1963.................................	5,210,563
1965.................................	5,633,990
1968.................................	7,381,287
1969.................................	7,834,060
1970.................................	7,700,427
1973.................................	8,339,533

[1] The nominal premium volumes have been deflated by the medical care component of the CPI. All values are in 1958 dollars.

TABLE 22.--Premiums, claims, and expenses per insuree, commercial insurance companies, 1965-70

(1) Year	(2) Persons with hospital expense protection, all insurance companies (in thousands) 1/	(3) Premiums earned (in thousands) 2/	(4) Claims incurred (in thousands) 2/	(5) Expenses incurred (in thousands) 2/	(6) (3)÷(2) Premiums earned per insuree	(7) (4)÷(2) Claims costs per insuree	(8) (5)÷(2) Administrative expenses per insuree
1965.............	93,723	$7,643,547	$5,810,325	$1,744,916	$81.55	$61.99	$18.62
1966.............	97,404	8,250,304	6,223,368	1,871,873	84.70	63.98	19.22
1967.............	100,298	8,879,811	6,679,642	1,996,373	88.53	66.60	19.90
1968.............	104,408	9,883,750	7,606,391	2,258,545	94.66	72.85	21.63
1969.............	108,508	10,906,188	8,548,945	2,462,259	100.51	78.79	22.69
1970.............	112,575	12,481,118	10,094,786	2,736,665	110.87	89.67	24.31
Percent change							
1967-1970...	12.2	40.5	52.6	37.0	25.2	34.6	22.2
1965-1970...	20.1	63.2	73.7	56.8	36.0	44.7	30.6

1/ National Underwriter Company, 1971 Argus Chart of Health Insurance (Cincinnati: National Underwriter Company, 1966-71).
2/ Health Insurance Institute, Source Book of Health Insurance Data (New York: The Institute, 1971).

CHAPTER 5: BLUE CROSS-BLUE SHIELD

For the most part the Blue Cross method of payment is "service benefit" rather than "indemnity." 1/ The contract that an individual insurer or group receives states the services for which payment will be made in any hospital affiliated with the area plan, regardless of the charges different hospitals make for the services. Payment is made directly to the hospital, not through the subscriber. Consequently, Blue Cross usually pays a lower rate per service than a person when he pays out of his own pocket or when he pays after having been indemnified by a commercial insurance company. Table 23 contains Blue Cross financial data for 1971. As can be seen, operating expenses are relatively widely dispersed. One reason for this variation is that plans are at varying stages in the continual cycle of readjusting their premium levels to account for increases in benefit costs. Also, plans that provide medical-surgical benefits often have higher operating costs than those that do not (table 24).

Blue Shield member plans are required to write comprehensive health care benefit programs for 20 broad benefit areas. Claims are paid to physicians based on the usual and customary fees in their regions or by indemnity, giving a fixed dollar amount per procedure. Tables 23-26 give financial data for Blue Shield in 1971. As with Blue Cross-Blue Shield, operating expenses vary widely from plan to plan, partly because the data for some plans include hospital expenses plus medical-surgical expenses. But even if these plans are excluded, as has been done in table 26, experience varies widely. Blue Shield operating costs as a percentage of subscription income often are higher than Blue Cross' because Blue Shield deals with individual physicians and Blue Cross, with hospitals.

Aggregate Blue Cross and Blue Shield operations account for some 43 percent of all private health insurance in the United States. In conjunction with their obvious importance as private providers of health insurance, the Blues perform much of the administrative work for the Medicare program. Given the large role that the Blues have played and continue to play in providing health insurance, it is natural to examine their performance.

As with the regressions for the commercial insurers, we used benefits paid plus administrative costs in the denominator instead of premiums earned and cost per enrollee in the plan. The basic rationale for de-

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1/ Service benefit insurance *fully* pays for *specific* hospital or medical care services. Indemnity insurance, on the other hand, is designed to pay *part* of the cost of services: that is, $8 toward the cost of a $10 physician visit or $50 toward the cost of a $65 hospital room.

flating the administrative costs of various plans by the number of enroll-
ees is that the administrative costs depend more on the number of epi-
sodes of service than the number of dollars in a claim. A number of
independent variables were entered to capture the effects of variations
in output mix. In the Blue Cross equations, a dummy was included to
account for the fact that some plans offer medical-surgical coverage as
well as hospitalization protection. Medical-surgical bills are smaller,
more frequent, and more varied than hospital bills. In addition, the
providers are less concentrated. Thus, administrative costs should be
higher for the Blue Cross plans that offer this additional coverage. 2/

Another important produce mix variable is the proportion of enrollees
insured through groups. The group variable should reduce administrative
costs. 3/ Similarly, the percentage of claims represented by the Federal
Employees Health Benefit Plan (FEHBP) should lower administrative costs
through efficiencies induced by the homogenity of policies. Whether
hospitals are reimbursed on the basis of charges or costs was included
as a dummy variable. We had no hypothesis, however, for how it should
affect administrative costs. Although the operating data do not contain
Medicare operating costs and reimbursements, the proportion of total
claims represented by Medicare claims is known. It was included to re-
flect the fact that Medicare business should affect costs in the private
business through possible economies of scale and accounting practices.

Claims per enrollee was entered because it should increase administrative
costs. Larger average claims size should decrease administrative costs,
particularly when administrative costs divided by benefit payments plus
administrative costs is the dependent variable.

A final explanatory variable is the proportion of the population in the
plan area enrolled in the plan. The larger the proportion, the lower
the administrative costs will be. This variable is clearly endogenous--
lower administrative costs should increase enrollment because of a de-
creased loading factor in the premium. Since the data necessary to esti-
mate an equation for the proportion enrolled were not available, we could

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2/ Conversely, for the same reasons, Blue Shield plans which offer
hospital coverage should have *lower* operating costs than Blue Shield
plans which do not.
    3/ In 1971 group business accounted for 80.4 percent of Blue Cross
business and 71.4 percent of commercial business. See National Associa-
tion of Blue Shield Plans, *Blue Cross and Blue Shield Fact Book, 1972*;
and National Underwriter Company, *1972 Argus Chart of Health Insurance*
(Cincinnati: The Company, 1972). The final product-mix variable is
major medical claims as a percentage of total claims. Given the com-
plexity of many major medical bills, we would expect a direct relation-
ship between this variable and our dependent variables.

not use this variable in the administrative cost equation. 4/

In addition to product mix variable, we wanted to include variables for firm size and input prices in our cost function. The size variable is the total number of claims paid per plans, including both private business and public programs such as Medicare, Medicaid, and CHAMPUS. 5/ Cost functions were estimated with the size variable and alternatively with the size variable and the square of the size variable. Factor prices are reflected by per capita income in the plan's operating area. Wage data were not available.

It would have been desirable to include in our model an average salary independent variable for each plan, but the only direct data available were facts about the salaries the plans paid their Medicare staff members. These salaries are higher than those paid regular employees because Medicare employees must perform the required audit function. Medicare auditors earn more because they are more highly skilled than the average employee. Medicare salaries were inserted into the model, but the salary variable proved to be insignificant. 7/ The data for office-clerical workers for 39 Blue Cross and 35 Blue Shield plans located in metropolitan areas were used. Regression results indicate no statistical significance for this wage variable.

The data for this chapter were drawn mainly from the *Blue Cross and Blue Shield Fact Book, 1972,* the *Blue Cross Comparative Cost Report on the 1971 National Cost Report,* and the *1971 National Cost Report, Statistical Summary,* prepared by the National Association of Blue Shield Plans, Finance and Internal Operations Division. 8/ In this chapter the individual Blue Cross and Blue Shield plans comprise the observational units. Although the *Fact Book* reports on the operations of 75 Blue Cross plans, we could only use 65 of them. For Blue Shield the *Fact Book* reports on

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4/ Inclusion of the variable did not affect the coefficients of the other variables. It obtained its expected negative sign.

5/ While the focus of this chapter is on costs in the private sector, Medicare and other forms of "business" could lead to further exploitation of scale economies. We also estimated the equations with the number of private enrollees as the size variable. Surprisingly, the results were not sensitive to the definition used.

6/ Civilian Health and Medical Program for the Uniformed Services. Eligible persons include dependents of active duty servicemen, widows and children of deceased servicemen, and military retirees and their dependents.

7/ U.S. Dept. of Labor, *Handbook of Labor Statistics,* 1972 (Washington: Govt. Print. Off., 1972).

8/ National Association of Blue Shield Plans, op. cit.

the operations of 71 plans, but we could use only 56. <u>9</u>/

Separate regressions for Blue Cross and Blue Shield plans were estimated in linear and quadratic forms. Basically, the same model was estimated for Blue Cross and Blue Shield: the dummy for charges, however, was deleted from the latter because it is irrelevant and the medical-surgical dummy takes the value of 1 if a Blue Shield plan offers hospitalization and of 0 otherwise.

Regression Results

We present the regression results for both Blue Cross and Blue Shield in table 27. Since there are two versions of the dependent variable and the size variable enters alone and along with the square of size, there are four equations for Blue Cross and four for Blue Shield. In general, the administrative cost per enrollee equations had better fits than the equations using operating costs divided by benefit payments plus operating costs as the dependent variable. Of course, it does not follow that one measure of costs is superior to the other. <u>10</u>/

First, the size variables. When the size variable is entered alone (equations 2, 4, 6, and 8), no economies of scale are apparent. For Blue Cross the coefficient simply lacks statistical significance. In the Blue Shield equations, however, significant diseconomies of scale obtained, particularly with cost per enrollee as the dependent variable. When the square of size variable is added (equations 1, 3, 5, and 7), some of the results change. Since the size variable and the square of size variable are highly correlated, one must evaluate the *marginal* effect of size on cost. This is done by estimating the coefficients in the quadratic cost function and then testing for the significance of $a+2b$ size, where a is the size coefficient and b is the square of size

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<u>9</u>/ Puerto Rico did not distribute data. The plans in Alabama; Arkansas; Mississippi; North Carolina; and Chattanooga and Memphis, Tenn., are joint Blue Cross-Blue Shield plans, and the accounting data do not break costs down for the separate operations. The Blue Cross plans in Chicago, Ill., Kansas City, Mo., and Bluefield, W. Va., did not submit a national cost report in 1971. Likewise, the Blue Shield plans in Atlanta, Ga.; Illinois; Kansas City, Mo.; Bremerton, Seattle, and Spokane, Wash.; and Bluefield and Morgantown, W. Va., did not submit a national cost report in 1971.

<u>10</u>/ The equations were also estimated with all size terms omitted to check for multicollinearity. No important effects on the other coefficients occurred. In a search for heteroskedasticity, we regressed the square residuals on the size and size squared variables without detecting any relationships. Since our dependent variable is a ratio, we had no a priori expectation of finding heteroskedasticity.

coefficient. Clearly, the margical effect of size varies with the size of the firm in a quadratic cost function. We present the size distribution of Blue plans, the calculated marginal effects of size over the appropriate range, and the calculated statistics in table 28.

For equation 1 it can be seen that the marginal effect of size is positive over that part of the range within which most Blue Cross plans are located. The coefficients, however, are not statistically significant at the 95-percent level over any part of the size range. The pattern of scale economies is the same in the cost per enrollee equation for Blue Cross. There are diseconomies of scale over the range in which most plans operate. In contrast to the results for the operating costs divided by benefit payments plus operating costs variable, however, these positive effects of size on average administrative costs *are* statistically significant.

Turning to the Blue Shield equations, great change in the results occurs when the square of size is added to the equation with operating costs divided by benefit payments plus operating costs as the dependent variable. The explanatory power of the equation is substantially improved and economies of scale appear over most of the range of plan sizes. Presumably, the relationship here is truly U-shaped and the previous linear formulation simply fits it poorly. This pattern does not carry over to the cost-per-enrollee equation for Blue Shield, where no statistically significant scale effects are obtained.

Results for the product mix variables are, for the most part, as expected. The medical-surgical variable is positive in the Blue Cross equations but insignificant in the Blue Shield equations. Its role in the Blue Cross equations appears to be quite substantial. Group claims as a percentage of total claims was not statistically significant in any of the equations. Medicare claims as a percentage of total claims have a positive sign in all equations, though they are statistically significant only in equations 3, 5, and 6. If Medicare business allowed Blue plans to realize economies of scale, the variable should have a negative sign. The positive sign thus reflects the absence of scale economies or the effects of accounting practices. The dummy for the charge form of reimbursement tends to increase administrative costs in Blue Cross plans, although the effect approaches statistical significance only when operating costs divided by benefit payments plus operating costs was used as the dependent variable. The effect of average claim size is contigent on the dependent variable used--a result which is not inconsistent. Similar results were obtained for claims per enrollee. The presence of Federal employee enrollees increases costs, but not to a statistically significant degree. The effect is more pronounced in the Blue Shield plans. Major medical policies often reduce costs in Blue Cross plans, but do not affect them significantly in Blue Shield plans.

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Finally, turning to per capita income, this proxy for input prices has positive coefficients in Blue Cross equations and negative coefficients in Blue Shield equations, but none are statistically significant.

Analysis

The results obtained on scale effects are very interesting in light of our a priori expectations and previous empirical work. In the previous chapter, we found decided scale economies for the commercial health insurers. A previous study of life insurance by Houston and Simon 11/ also found the presence of scale economies. In addition, one further study with results that are broadly consistent with ours is Hensley's financial enterprises. 12/ These studies all suffer from a similar shortcoming--the insurance industry's output appears to be a simple contingency claim which protects an individual's wealth. But, as we have said, insurers provide many other services as well. To the extent that service mix is directly correlated with firm size, specification bias could result. In other words, true economies of scale could be masked by the higher costs that a broader service mix would require. In spite of this problem, the previous studies have found economies of scale.

Initially, one might expect the behavior of the Blues' administrative costs to be similar to the commercial insurers' since many of the services provided are similar. In fact, there is reason to expect better explanatory power for a cost function for Blue Cross or Blue Shield plans since output among the plans is more homogeneous. But the fact that the Blue plans are organized on a private, nonprofit basis may alter these expectations.

Largely because of a belated recognition of their great importance in the economy, nonprofit firms have been receiving an increasing amount of attention from economists of late. This has been particularly true in

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11/ David B. Houston and Richard M. Simon, "Economies of Scale in Financial Institutions: A Study in Life Insurance," *Econometrica*, November 1970, pp. 856-64.
12/ Roy J. Hensley, "Economies of Scale in Financial Enterprises," *Journal of Political Economy*, October 1958, 66, pp. 389-98.

the hospital industry. 13/ Many analysts conclude that nonprofit firms have an incentive to achieve technical efficiency, but empirical tests of this conclusion are scarce.

Most studies of nonprofit firms have proceeded by hypothesizing that some objective function other than the profit function is to be maximized. The objective function may include variables such as size of firm, quality of services, income of those in control, and use of capital. Maximizing these objectives is often limited by the constraint that the firm break even (including donations and subsidies as revenue). It can be deduced from these models that nonprofit firms have an incentive to achieve technical efficiency to maximize objectives. Except for the models that include inputs in the objective function, they also have an incentive to achieve input efficiency. Consequently, differences in performance between for-profit and nonprofit firms involve only pricing, the size of the output, and the mix of services that comprise output.

Since Blue plans are in competition with commercial insurers in the sale of health insurance, the extent to which inefficiency could develop appears to be limited. Blue plans, however, enjoy very substantial competitive advantages. For example, State governments often collect a premium tax on insurance sales from which most Blue plans are exempt, as they are from many local property taxes and corporate income taxes. Moreover, Blue Cross enjoys an advantage in the purchase of hospital care for its beneficiaries. The plans reimburse hospital charges at usually lower rates than the commercial insurers. Although Blue Shield plans do not have this advantage over their competition in purchasing services, they may have an advantage in combating physician fraud through the cooperation of local medical establishments. Given the significant competitive advantages of the Blue plans over commercial insurers, it is possible for the Blues not to minimize administrative costs at the same time they are maintaining, or even increasing, their market shares.

The possibility of inefficiency in the Blue operations poses important difficulties for the estimation of cost functions because the Blues may

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13/ These studies include the following: Martin S. Feldstein, *The Rising Cost of Hospital Care* (Washington: 1971); and "Hospital Cost Inflation: A Study in Non-Profit Dynamics;" *American Economic Review*, December 1971, vol. 61, pp. 853-872; P. B. Ginsburg, "Capital Investment by Non-Profit Firms: The Voluntary Hospital," M.S.U. Econometrics Workshop Paper 7205, revised June 1973; M. F. Lee, "A Conspicuous Production Theory of Hospital Behavior," *Southern Economic Journal*, July 1971, 38, pp. 48-58; J. Newhouse, "Toward A Theory of Non-Profit Institutions: An Economic Model of a Hospital," *American Economic Review*, March 1970, 60, pp. 64-73; and M. V. Pauly and M. Redisch, "The Hospital as a Physician's Cooperative," *American Economic Review*, March 1973, 63, pp. 87-99.

not be operating on the minimum average cost function. These deviations may be both systematic and nonsystematic. Any systematic deviation from the minimum average cost function could make it impossible to estimate meaningful cost functions because the cross-section observations would not trace out the cost envelope. Nonsystematic deviations may result from local competitive conditions, organizational differences, and variations in the objective function from plan to plan. These deviations would serve to reduce the efficiency of estimation. Thus, although more homogeneous outputs among the Blue plans lead to the expectation of better estimation for the Blues than for commercial insurers, the nonprofit organization of the Blues and the consignment favorable treatment they receive work in the other direction and could cause less successful estimation for them.

A review of the results actually obtained on scale effects gives evidence that the Blue plans are *not* operating on their minimum average cost curve. The results of studies of other insurers led us to expect economies of scale, but, except for the estimates for Blue Shield when operating costs divided by benefits paid plus operating costs was the dependent variable, these scale economies are not observed. The fact that scale economies show up in a Blue Shield equation rather than one for Blue Cross is consistent with our model. Since Blue Cross plans have more competitive advantages and, thus, can depart more radically from technical efficiency without going out of business, one should expect the observed result. While the evidence is certainly not categorical, we interpret these observed size effects as being consistent with inefficiency among Blue plans. 14/

A single test, in light of these results, is not enough. In an effort to reject this inference, we examined a further aspect of Blue Cross-Blue Shield: the potential efficiencies of merging Blue Cross and Blue Shield when the two plans operate separately in a single area.

14/ While misspecification resulting from incomplete adjustment for output variation is possible, the omitted variable would have to correlate with size to bias the estimate of economies of scale. There is no evidence that this is so. Similarly, the results of economies of scale among commercial insurers could have resulted from specification bias, but there is no evidence that large commercial insurers have a less expensive output mix than the smaller. Another possible source of bias lies in this difference--most Blue Cross insurance is hospital insurance and most Blue Shield insurance is medical insurance. But commercial insurers sell both kinds. However, in 1971 the commercial insurers paid $3.5 billion in hospital benefits, only $1.3 billion in surgical and regular medical benefits (Health Insurance Institute, *Source Book of Health Insurance Data, 1973-74,* p. 41). The preponderant amount of commercial health insurance is, therefore, hospital insurance.

Blue Cross-Blue Shield Mergers

There are four types of administrative relationships among Blue plans. In some areas Blue Cross and Blue Shield operate as one corporation and, thus, are completely merged. More common is a situation in which there are two corporations, but one chief executive and one management team. In our analysis we considered this form or organization as merged. The most common relationship is one in which Blue Cross and Blue Shield have separate corporations and chief executives but cooperate in some matters such as sharing a computer. Finally, some plans have no relationship. We considered the latter two arrangements as unmerged.

A priori there is reason to believe that the joint Blue Cross-Blue Shield operations would be the most efficient because the merged organizations should have diminished overhead costs. Only one set of executives would be necessary; and economies of scale in computerized clerical functions could be achieved. Much duplication such as that in advertising could be eliminated. 15/

To assess the effects of mergers on costs, we combined data on the Blue Cross and Blue Shield plans in an area. Cost functions similar to those in table 27 were estimated with a dummy variable indicating whether the plans were effectively merged. A shown in table 29, merged plans had significantly lower costs. Using operating costs divided by benefit payments plus operating costs as the dependent variable, merging reduced costs by 20 percent at the mean. For cost per enrollee the reduction is 26 percent. These empirical results are consistent with a priori reasoning about the efficiency of having only one Blue operation in an area. 16/

15/ Areas where one of the Blues did not have a plan were omitted. Nonetheless, 66 observations remained.
16/ Why did the merger equations exhibit economies of scale even though incentive structures remain comparable to the nonmerged situation, nonprofit status, no taxes, and the payment of costs rather than charges? There are basically two related reasons for this phenomenon: administrative functions that were done separately are now combined, and to do the regression analysis, the nonmerged plans had to be made statistically comparable to the merged plans. This was done by taking weighted averages (number of enrollees) of the Blue Cross and Blue Shield data in a State. These weighted averages were then used as the variables for the nonmerged plans. The weighted averages for the dependent cost variable reflect the duplications of having a separate Blue Cross and a separate Blue Shield. Charles Phelps of the RAND Corporation has pointed out to us that there is a further policy relevance of these merger findings: the implication is that the present Medicare administrative split between Parts A and B may not be the most efficient.

Administrative Costs Over Time

Tables 30 and 31 indicate the changes in Blue Cross subscription income, claims expense, and operating expenses per subscriber over time. During the 12-years, operating expenses per subscriber went up more rapidly than either subscription income or claims incurred. This phenomenon is due to the inflation of the post-Medicare period; between 1960 and 1966 administrative costs rose by 50 percent, while subscription income and claims incurred only increased by 75.5 percent and 76.1 percent. Figure 1 indicates the relative movement of these three indices over time.

It is difficult to explain why operating costs per enrollee have behaved as they have over time. Claims expenses and subscription income are largely a function of hospital care costs. If hospital costs are increasing rapidly, claims expenses should increase equally rapidly. Because one of Blue Cross' objectives as a nonprofit insurer is to break even, subscription income should increase as rapidly as hospital costs and claims expenses. But operating costs per enrollee are a function of a number of variables: the intensity and quality of claims review, the number of claims processed, the size of the claims, the size distribution of those claims, the type of insurance offered (differing deductibles and coinsurance rates), selling costs, more subscriber services offered, equal (women's) rights pressures, and unionization pressures. It would be interesting to know which of these variables has had significant influence on Blue Cross-Blue Shield operating expenses.

Conclusions

In this chapter we have examined separately the average administrative costs of Blue Cross and Blue Shield. The results we obtained can be interpreted in two ways. The failure to associate any variables other than product mix with average administrative costs can be seen as resulting from omitted variables or to lack of incentive to minimize costs as a result of the Blues' nonprofit form of organization. The latter explanation appears more likely when economies of scale found in other studies are considered. The tentative nature of this conclusion would be disquieting in the absence of any other corroborating evidence. But such further evidence exists: our analysis of alternative Blue Cross-Blue Shield organizations indicates that opportunities for significant cost saving through merged operations have been eschewed.

INDEX

300

200

100

0

1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 YEAR

Claims expenses

Subscription income

Operating expenses

$$INDEX = \frac{\text{Value for year}}{\text{Average value for 1959-61}}$$
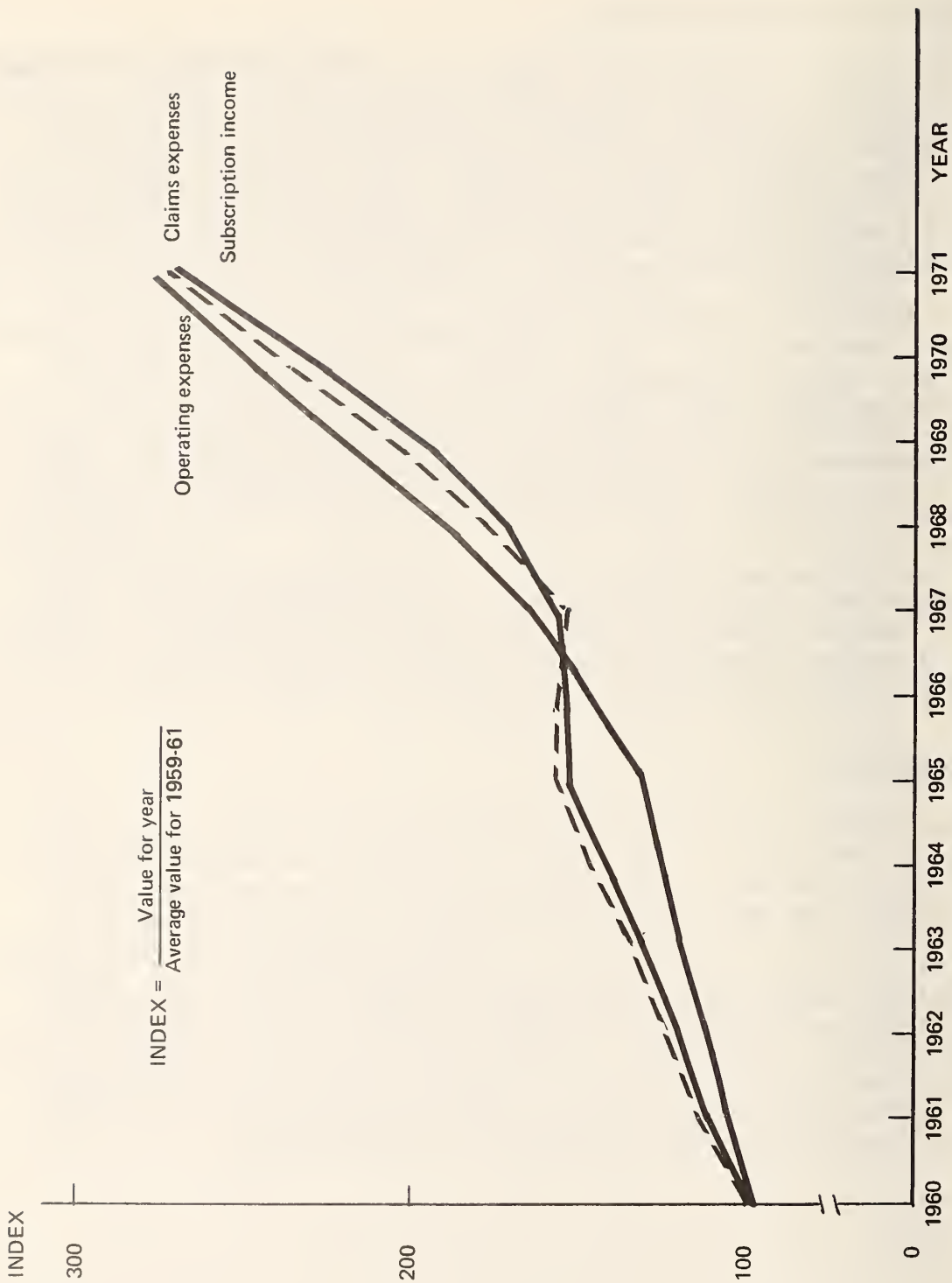
Figure 1 - Index of subscription income, claims expenses, and operating expenses, per enrollee, Blue Cross, 1960 - 71
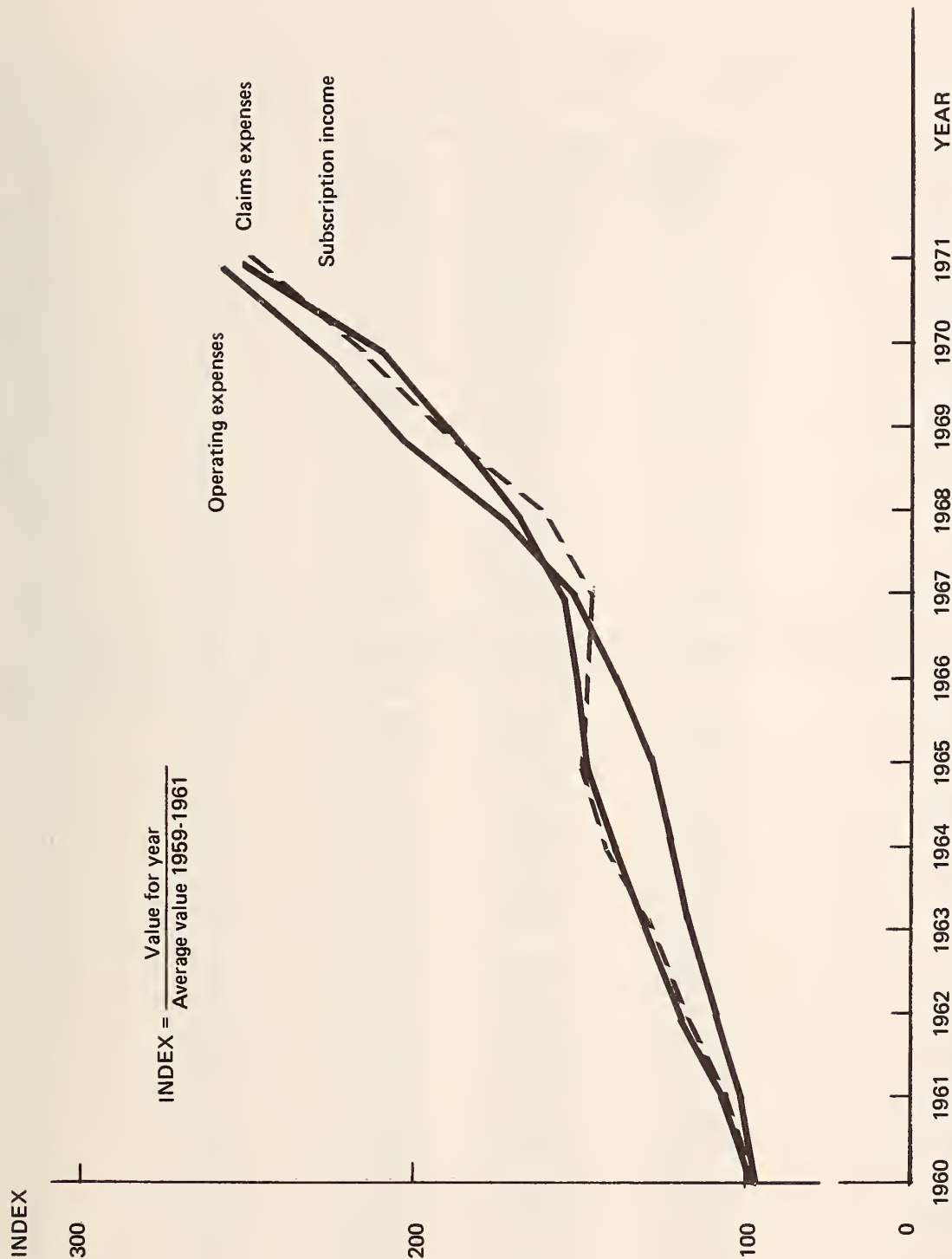
64

Figure 2 - Index of subscription income, claims expenses, and operating expenses, per enrollee, Blue Shield, 1960-71

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TABLE 23.--Blue Cross financial data, Jan. 1-Dec. 31, 1971

Plan	Earned subscription income	Claims expense	Operating expense	Percent of earned subscription income	
				Claims expense	Operating expense
ALA., Birmingham 1/........	$123,585,582	$120,569,049	$6,051,164	97.6	4.9
ARIZ., Phoenix............	25,266,581	25,048,138	1,756,015	99.1	6.9
ARK., Little Rock 1/......	37,300,507	35,831,626	2,826,045	95.8	7.6
CALIF., Los Angeles 1/....	223,010,137	205,773,040	15,377,238	92.3	6.9
CALIF., Oakland 2/........	174,209,570	168,289,106	14,595,659	96.6	8.4
COLO., Denver.............	71,915,994	68,906,293	4,340,021	95.9	6.0
CONN., North Haven........	134,400,598	127,430,555	5,650,827	94.8	4.2
DEL., Wilmington 2/.......	33,304,120	30,674,677	1,091,816	91.9	3.3
D.C., Washington..........	98,585,490	93,744,917	5,179,981	95.1	5.3
FLA., Jacksonville........	96,390,094	88,440,190	5,445,380	91.8	5.6
GA., Atlanta..............	33,232,060	32,721,115	1,693,306	93.3	5.1
GA., Columbus.............	25,577,197	23,690,477	1,573,606	92.7	6.2
IDAHO, Boise 2/...........	10,551,622	9,932,771	1,104,475	94.1	10.5
ILL., Chicago.............	311,925,278	299,234,890	16,601,102	95.9	5.3
ILL., Rockford 1/.........	8,551,044	7,465,374	935,503	87.3	10.9
IND., Indianapolis........	161,401,550	148,333,927	12,400,910	91.9	7.7
IOWA, Des Moines..........	55,141,792	53,064,663	3,368,125	96.2	6.1
IOWA, Sioux City..........	13,951,114	13,101,418	910,278	93.0	6.5
KANS., Topeka.............	60,430,654	50,973,511	3,692,789	84.4	6.1
KY., Louisville...........	71,721,587	66,662,441	3,320,759	92.9	4.6
LA., Baton Rouge 1/.......	38,351,893	34,546,403	3,394,213	98.1	8.9
LA., New Orleans..........	31,075,532	29,530,925	2,205,264	81.8	7.1
MAINE, Portland...........	27,773,198	27,027,376	1,585,783	97.3	5.7
MD., Towson...............	132,324,775	124,971,003	5,127,392	94.4	3.9
MASS., Boston.............	320,625,000	305,842,000	11,920,000	95.4	3.7
MICH., Detroit............	476,650,000	469,146,000	20,539,000	98.4	4.3
MINN., St. Paul...........	75,075,494	67,354,306	5,120,096	89.7	6.3
MISS., Jackson 1/.........	40,860,391	38,668,476	3,306,090	94.6	8.3
MO., Kansas City..........	45,612,352	44,439,818	2,631,212	97.4	5.8
MO., St. Louis............	108,124,193	102,347,445	4,703,296	94.7	4.4
MONT., Great Falls 1/.....	7,629,125	7,195,823	777,142	94.3	10.2
NEBR., Omaha..............	28,542,444	28,648,797	2,351,224	93.6	8.2
N.H., Concord.............	29,060,338	33,944,451	1,067,935	116.9	6.8
N.J., Newark..............	294,430,835	274,760,000	11,727,257	93.3	4.0
N.M., Albuquerque.........	8,404,119	7,943,803	503,850	93.3	6.0
N.Y., Albany..............	46,187,427	42,948,633	2,390,121	93.0	5.2
N.Y., Buffalo.............	72,480,257	65,277,806	3,819,522	90.1	5.3
N.Y., Jamestown...........	2,992,554	2,632,900	127,919	90.7	4.4
N.Y., New York...........	616,430,071	581,126,820	35,707,304	94.3	5.8
N.Y., Rochester...........	64,567,341	56,000,114	2,427,134	86.9	3.8
N.Y., Syracuse............	35,257,280	33,321,021	1,479,418	94.5	4.2
N.Y., Utica...............	16,977,305	15,931,957	770,993	93.8	4.5
N.Y., Watertown...........	2,890,408	2,679,252	221,911	92.4	7.7
NORTH CAROLINA 1/2/.......	126,941,000	125,513,000	8,398,000	99.6	6.7
N. DAK., Fargo............	24,410,180	21,465,640	1,311,051	87.9	5.4
OHIO, Canton..............	18,759,505	17,699,567	587,270	94.3	3.1
OHIO, Cincinnati..........	138,200,911	125,012,757	5,086,946	90.5	3.7
OHIO, Cleveland...........	172,187,397	165,057,450	6,592,331	96.3	3.8
OHIO, Columbus............	47,747,015	46,090,923	1,646,776	98.4	3.4
OHIO, Lima................	9,030,103	8,268,567	273,222	91.1	3.0
OHIO, Toledo..............	56,376,068	53,880,718	1,910,692	95.6	3.4
OHIO, Youngstown..........	37,680,000	36,863,573	1,002,408	97.8	2.7
OKLA., Tulsa..............	48,045,231	44,176,293	2,412,014	91.9	5.0
OREG., Portland...........	48,601,966	44,614,685	3,708,311	91.8	7.6
PA., Allentown............	22,913,843	23,733,790	1,177,369	103.6	5.1
PA., Harrisburg...........	61,942,207	59,179,671	2,655,910	95.5	4.3
PA., Philadelphia.........	199,841,490	203,623,706	6,985,061	181.9	3.5
PA., Pittsburgh...........	190,040,833	185,533,738	9,754,981	93.2	4.0
PA., Wilkes-Barre.........	34,412,033	34,530,728	1,233,752	100.4	3.6
R.I., Providence..........	60,394,100	53,726,867	2,004,063	89.0	3.5
S.C., Columbia............	33,230,033	30,075,256	2,042,685	92.9	6.1
TENN., Chattanooga 1/.....	92,793,856	89,679,310	6,205,037	96.6	6.8
TENN., Memphis 1/.........	20,890,917	19,365,528	1,799,660	92.8	8.6
TEX., Dallas 1/...........	310,512,435	292,632,273	18,304,225	94.2	5.9
UTAH, Salt Lake City......	20,750,090	19,550,507	1,249,899	94.2	6.0
VA., Richmond.............	69,087,564	61,097,145	3,691,193	88.3	5.4
VA., Roanoke..............	21,024,801	20,552,301	891,077	97.8	3.3
WASH., Seattle 1/.........	44,226,030	40,022,340	4,398,203	90.5	9.9
W.VA., Bluefield..........	1,827,077	1,940,051	104,024	106.7	5.7
W.VA., Charleston.........	14,843,809	15,403,051	675,922	104.4	4.6
W.VA., Parkersburg........	3,746,207	3,466,814	107,468	92.5	2.9
W.VA., Wheeling...........	10,446,063	9,075,025	320,227	95.5	3.1
WIS., Milwaukee...........	143,117,526	130,532,111	9,197,055	91.2	6.4
WYO., Cheyenne............	4,988,316	4,461,429	307,511	89.4	6.2
P.R., San Juan 3/.........	---	---	---	---	---
Total member plans....	6,300,126,607	6,053,537,700	330,903,565	94.7	5.3

1/ Includes medical surgical plan.
2/ Includes reserves for deferred maternity benefits.
3/ Dec. 31, 1971, financial report not received before publication.

TABLE 24.--Operating costs as a percentage of earned subscription income, Blue Cross, 1971

Percent of earned sub-scription income	(1) All plans	(2) With medical coverage	(3) (1)-(2)
<2.0			
2-2.9................	2		2
3-3.9................	15		15
4-4.9................	12	1	11
5-5.9................	15	1	14
6-6.9................	16	3	13
7-7.9................	5	3	2
8-8.9................	5	4	1
9-9.9................	1	1	
>10.0...............	3	3	
Total...........	74	16	58

SOURCE: Blue Cross-Blue Shield Association, *Blue Cross and Blue Shield Fact Book 1972*, 1972

TABLE 26.--Blue Shield financial data, Jan. 1-Dec. 31, 1971

Plan	Earned subscription income	Claims expense	Operation expense	Percent of earned subscription income	
				Claims expense	Operating expense
ALA., Birmingham 1/........	$123,585,580	$120,569,950	$6,051,165	97.56	4.90
ARIZ., Phoenix.............	13,142,840	11,585,953	1,946,011	88.15	14.81
ARK., Little Rock 1/.......	37,309,587	35,031,625	2,926,045	95.83	7.56
CALIF., San Francisco 1/....	134,726,230	114,290,370	21,682,268	84.83	16.00
COLO., Denver..............	30,981,639	27,534,728	3,867,039	89.04	12.30
CONN., New Haven 1/........	39,420,570	35,483,110	4,030,013	90.01	10.22
DEL., Wilmington..........	13,282,100	11,744,314	1,215,833	89.42	9.15
D.C., Washington..........	93,739,532	83,574,177	9,707,904	89.16	10.36
FLA., Jacksonville........	41,249,775	34,030,703	5,597,757	82.50	13.57
GA., Atlanta..............	9,251,465	8,216,169	1,501,439	88.51	16.23
GA., Columbus.............	12,808,975	10,808,736	1,932,635	84.38	15.09
HAWAII, Honolulu 1/........	42,443,039	40,095,561	2,892,275	94.47	6.81
IDAHO, Lewiston 1/.........	5,684,367	5,104,827	488,615	89.30	8.60
ILL., Chicago.............	69,000,094	64,043,045	9,414,999	92.82	13.64
IND., Indianapolis........	76,096,793	67,011,306	6,273,129	88.06	8.24
IOWA, Des Moines..........	46,140,369	47,036,142	5,329,849	101.94	11.55
KANS., Topeka.............	33,570,024	30,969,748	3,676,738	92.25	10.95
KY., Louisville...........	23,290,299	20,377,912	3,089,185	87.50	13.26
MAINE, Portland...........	8,199,889	7,130,289	1,197,650	87.59	14.61
MD., Baltimore............	43,041,143	41,386,941	4,503,723	96.16	10.46
MASS., Boston.............	116,313,000	103,658,000	13,036,000	89.12	11.21
MICH., Detroit............	369,245,810	280,409,333	24,662,768	75.94	6.68
MINN., Minneapolis........	41,490,733	34,774,414	6,772,640	83.81	16.32
MISS., Jackson 1/.........	40,360,391	38,668,476	3,396,989	94.64	8.31
MO., Kansas City..........	22,897,334	21,496,845	2,965,723	93.88	12.95
MO., St. Louis............	30,002,568	27,577,998	4,307,795	91.92	14.36
MONT., Helena 1/..........	9,930,088	9,030,242	1,007,325	91.44	10.15
NEBR., Omaha..............	16,103,798	14,310,679	1,926,122	88.43	11.90
N.H., Concord.............	16,214,930	16,997,214	2,598,947	104.27	15.93
N.J., Newark..............	106,103,130	96,952,492	11,843,195	86.85	11.34
N.M., Albuquerque.........	5,416,105	4,895,170	707,340	90.38	13.06
N.Y., Albany..............	15,607,179	14,607,389	1,984,041	93.59	12.71
N.Y., Buffalo.............	38,663,889	37,054,717	4,571,258	95.84	11.82
N.Y., Jamestown...........	1,458,719	1,134,664	190,677	91.21	13.07
N.Y., New York............	135,841,850	124,646,560	21,271,465	91.76	15.66
N.Y., Rochester...........	23,666,468	21,313,962	1,900,413	90.06	8.03
N.Y., Syracuse............	12,663,444	12,859,032	1,494,690	101.54	11.80
N.Y., Utica...............	7,494,271	7,202,674	909,719	97.23	12.29
N.C., Chapel Hill 1/.......	126,041,000	126,513,000	8,390,000	99.58	6.63
N.D., Fargo...............	13,190,028	10,932,792	1,663,952	82.89	12.61
OHIO, Cleveland...........	44,993,026	40,676,077	4,715,439	90.40	10.48
OHIO, Worthington.........	83,895,303	75,717,193	10,425,714	90.05	12.43
OKLA., Tulsa..............	19,657,592	18,119,375	2,384,487	92.17	12.13
OREG., Portland...........	25,131,453	22,575,103	2,534,714	89.83	10.09
PA., Camp Hill............	166,330,890	157,121,640	19,534,926	94.46	11.74
R.I., Providence..........	21,339,026	20,179,185	2,074,121	94.56	9.72
S.C., Columbia............	11,598,477	9,334,565	2,063,655	80.48	17.84
S.D., Sioux Falls.........	2,317,838	1,682,061	408,555	72.57	17.63
TENN., Chattanooga 1/......	92,793,856	89,679,319	6,295,037	96.64	6.78
TENN., Memphis 1/..........	20,890,917	19,386,528	1,799,660	92.79	8.61
TEX., Dallas..............	40,615,767	36,290,185	5,893,946	89.35	14.51
UTAH, Salt Lake City......	16,000,120	14,560,379	1,639,690	90.68	10.25
VA., Richmond.............	32,249,179	28,505,473	3,346,764	88.39	10.38
VA., Roanoke..............	8,615,949	8,199,469	571,120	93.00	6.48
WASH., Bremerton 1/........	5,126,728	4,584,927	459,395	89.43	8.96
WASH., Seattle (KING) 1/...	27,479,738	28,503,821	2,615,532	103.73	9.52
WASH., Seattle (WPS) 1/....	17,631,979	15,657,937	1,943,289	88.39	11.02
WASH., Spokane 1/.........	13,900,343	12,830,196	1,354,614	92.30	9.75
WASH., Tacoma 1/..........	11,622,313	10,950,603	754,099	94.22	6.48
WASH., Walla Walla 1/......	637,793	520,346	71,299	81.59	11.18
WASH., Weentchee 1/........	954,657	764,670	121,624	79.05	12.72
W.VA., Bluefield..........	499,517	472,397	68,400	94.57	13.69
W.VA., Charleston.........	5,315,061	4,599,634	654,699	86.54	12.32
W.VA., Clarksburg.........	609,092	542,703	67,979	89.10	11.16
W.VA., Morgantown.........	448,800	415,853	30,140	92.66	6.72
W.VA., Parkersburg........	1,178,250	1,104,819	97,774	93.77	8.30
W.VA., Wheeling...........	3,367,028	2,910,303	313,477	86.43	9.31
WIS., Madison 1/..........	44,507,488	39,736,437	4,341,557	89.28	9.75
WIS., Milwaukee...........	51,522,775	51,960,300	5,409,588	100.81	10.50
WYO., Cheyenne............	2,826,150	2,357,001	356,164	83.40	12.60
P.R., San Juan 1/.........	19,234,618	17,669,929	1,722,575	91.97	8.98
Total member plans....	2,833,730,500	2,548,485,680	297,004,760	89.93	10.48

1/ Includes hospital.

TABLE 26.--Operating costs as a percentage of earned subscription income, Blue Shield, 1971

| Percent of earned sub-scription income | (1) | (2) | (3) |
	All plans	With hospital coverage	(1)-(2)
<4.9.................	1	1	
5-6.9................	7	4	3
7-8.9................	7	4	3
9-10.9...............	17	7	10
11-12.9..............	20	3	17
13-14.9..............	11		11
15.............	8	1	7
Total..........	71	20	51

SOURCE: Blue Cross-Blue Shield Association, *Blue Cross-Blue Shield Fact Book, 1972,* 1972.

TABLE 27.--Blue Cross and Blue Shield cost functions [1]/

Model	Dep var	Constant	Meds	Size	Qsize	Group	Medcare	Charge	CLE	ACS	CAPY	MM	FEHB	OPCOST	$\bar{R}^2$	Sy
							Blue Cross									
1	OPCOST	.563-01 (1.940)	.458-01 (8.235)	.818-01 (1.590)	-.154-08 (1.607)	-.430-04 (.160)	.234-03 (1.477)	.711-02 (1.677)	-.373-01 (2.359)	-.131-03 (2.390)	.676-06 (1.282)	-.718-01 (2.099)	.428-03 (1.292)		.55	.013
2	ENCOST	-.239+01 (1.027)	.430+01 (9.618)	.105-02 (2.540)	-.168-06 (2.184)	.280-01 (1.298)	.264-01 (2.072)	.168+00 (.491)	.147+01 (1.160)	-.651-03 (.210)	.538-04 (1.269)	-.369+01 (1.344)	.171-01 (.641)		.73	1.022
3	OPCOST	.571-01 (1.941)	.447-01 (7.978)	.737-06 (.324)		-.827-04 (.305)	.160-03 (1.040)	.849-02 (2.002)	-.310-01 (1.994)	-.106-03 (2.952)	.696-06 (1.300)	-.756-06 (2.185)	.381-03 (1.137)		.54	.013
4	ENCOST	-.230+01 (.955)	.417+01 (9.101)	.237-03 (1.273)		.237-01 (1.065)	.183-01 (1.452)	.318+00 (.917)	.216+01 (1.700)	.213-02 (.729)	.559-04 (1.277)	-.411+01 (1.450)	.119-01 (.434)		.71	1.057
5	MEDCOST	.175+01 (4.954)		.278-05 (.068)					-.180-04 (1.701)					.173.01 (.936)	.03	.281
							Blue Shield									
6	OPCOST	.188+00 (5.901)	-.473-02 (.396)	-.493-05 (2.785)	.203-09 (3.841)	-.241-03 (.681)	.167-01 (3.975)		-.170-01 (2.632)	-.829-03 (3.355)	-.815-06 (.119)	-.227-01 (1.206)	.344-01 (1.297)		.50	.019
7	ENCOST	-.151+00 (.059)	.505+00 (.528)	-.928-04 (.655)	.668-08 (1.577)	.135-01 (.476)	.299+00 (.888)		.250+01 (4.835)	.451-01 (2.279)	-.262-03 (.477)	-.157+01 (1.042)	.228+01 (1.074)		.74	1.550
8	OPCOST	.187+00 (5.174)	-.116-02 (.086)	.139-05 (1.874)		-.348-03 (.866)	.145-01 (3.051)		-.111-01 (1.549)	-.546-03 (2.030)	-.679-05 (.893)	-.133-01 (.623)	.526-01 (1.768)		.34	.022
9	ENCOST	-.156+00 (.060)	.622+00 (.642)	.115-03 (2.167)		.995-02 (.347)	.225+00 (.665)		.270+01 (5.282)	.544-01 (2.836)	-.458-03 (.844)	-.126+01 (.829)	.288+01 (1.356)		.73	1.575
10	MEDCOST	-.160+01 (.261)		.263-03 (2.104)							.132-02 (.866)			.110 (.469)	.07	4.538

1/ |t| in parentheses.

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TABLE 28.--Marginal effect of size on average cost: Models 1, 2, and 7 1/

Size (thousands of claims)	Size distribution of Blue plans	
	Number of Blue Cross plans	Number of Blue Shield plans
0-99.................................	5	7
100-199..............................	8	4
200-299..............................	11	6
300-399..............................	7	2
400-499..............................	6	7
500-599..............................	8	2
600-699..............................	3	6
1,000-1,999.........................	9	10
2,000-2,999.........................	5	4
3,000-3,999.........................	2	1
4,000-4,999.........................	0	1
5,000-9,999.........................	1	4
10,000 and over....................	0	2
Mean size ($\overline{X}$)......................	874.4	2136.3

Size	Effect of size			
	Model 1 Blue Cross OPCOST	Model 2 Blue Cross ENCOST	Model 6 Blue Shield OPCOST	Model 7 Blue Shield ENCOST
$.01\overline{X}$...............................			-6.376-06 (2.8)	-.926-04 (0.7)
$.05\overline{X}$...............................	.859-05 (1.5)	1.034-03 (2.5)	-6.328-06 (2.8	-.914-04 (0.6)
$.1\overline{X}$................................	.844-05 (1.5)	1.019-03 (2.5)	-6.267-06 (2.8)	-.900-04 (0.6)
$.25\overline{X}$...............................	.800-05 (1.5)	.975-03 (2.5)	-6.108-06 (2.7)	-.857-04 (0.6)
$.5\overline{X}$................................	.727-05 (1.5)	.902-03 (2.6)	-5.828-06 (2.7)	-.786-04 (0.6)
$\overline{X}$.................................	.581-05 (1.4)	.754-03 (2.5)	-5.267-06 (2.6)	-.643-04 (0.5)
$2\overline{X}$................................	.288-05 (1.0)	.460-03 (2.2)	-4.145-06 (2.3)	-.358-04 (0.3)
$4\overline{X}$................................	-.296-05 (0.9)	-.219-03 (0.5)	-2.045-06 (1.6)	.213-04 (0.3)
$8\overline{X}$................................	-1.466-05 (1.4)	-1.308-03 (1.8)	2.498-06 (2.9)	1.355-04 (2.5)
$12\overline{X}$...............................	-2.635-05 (1.5)	-2.486-03 (2.0)	7.042-06 (4.3)	2.496-04 (2.5)

1/ /t/ in parentheses.

TABLE 29.-- Effects of merger of Blue Cross and Blue Shield operations 1/ on combined costs

Dependent variables	Constant	Merge	Size	QSize	Group	FEHB	Medicare
OPCOST............	.885-01 (3.543)	-.145-01 (3.248)	-.400-05 (3.410)	.155-09 (4.986)	-.318-01 (1.256)	.396-01 (1.853)	.178-01 (3.175)
ENCOST............	-.549 (2.16)	-.135-01 (2.968)	-.249-03 (2.081)	.107-07 (2.748)	.250+01 (.969)	.124+01 (.570)	.122+01 (2.131)
	Charge	CLE	ACS	CAPY	MM	R^2	SY
OPCOST............	.984-02 (2.278)	-.826-03 (.213)	-.107-03 (2.755)	.641-05 (1.193)	-.100-00 (1.447)	.53	.014
ENCOST............	.153-01 (.035)	.221+01 (5.586)	.108-01 (2.732)	.272-03 (.497)	.263+01 (.374)	.74	1.510

1/ /t/ in parentheses.

CHAPTER 6: THE FEDERAL GOVERNMENT AS
HEALTH INSURANCE PROVIDER

The Federal Government has been a major provider of health insurance since July 1, 1966, when titles XVIII and XIX--Medicare and Medicaid-- were added to the Social Security Act. In this chapter we discuss the Medicare program.

Medicare Administration

Medicare, Part A, covers hospital insurance (HI) financed through the payroll tax in the same way as the old-age, survivors, and disability insurance (OASDI) benefits. Part B covers supplementary medical insurance (SMI), a voluntary program, jointly financed through the general funds and monthly premium payments deducted from participants' social security checks. Until 1973 these payments bore a systematic relation to expected expenditures under Part B since the premium was set at one-half the cost of Part B. Public Law 92-603 (1973), however, changed the method of financing Part B: the rate of increases on the beneficiary shares of premium is now limited to the rate of increase in the amount of old-age benefits. General revenues pay the rest.

Although the Federal Government is the insurer under Medicare, the major portion of the administration of the program is done by the intermediaries who administer Part A and the carriers who administer Part B. The intermediaries and carriers are reimbursed for the *reasonable* costs they incur in performing these administrative functions. Intermediaries are selected by the Secretary of Health, Education, and Welfare (HEW) from nominations by groups or associations of providers. A member of a provider association, however, may elect to be reimbursed by an intermediary other than one nominated by his association directly by the Social Security Administration. About 90 percent of all payments under Part A are currently made by Blue Cross plans.

Carriers, on the other hand, are selected directly by the Secretary. With the exception of the benefits for railroad retirees, which are administered by the Travelers Insurance Company, carriers are assigned administrative responsibility for the services provided in a geographic area. Thus, for example, a beneficiary who is a Pennsylvania resident and who is hospitalized while visiting Florida is expected to submit claims to the Florida carrier for medical expenses incurred in Florida and to the Pennsylvania carrier for medical expenses incurred in Pennsylvania. A patient may deal directly with the carrier, or he may assign his bill for collection to a physician or other supplier who is willing to accept assignment. About two-thirds of all Part-B bills were assigned in 1971. When there is no assignment, the Medicare enrollee has to pay the difference between what the physician charges and what Medicare pays as an allowable charge. The percentage of assigned claims decreased in 1972-73.

Intermediaries make payments to hospitals, extended care facilities, and home health agencies for covered items and services on the basis of reasonable cost determinations. They also audit provider accounts to determine the accuracy of Medicare billing, make costs reports and check for reasonableness of costs, perform claim reviews to check the coverage of services billed and monitor the appropriateness of medical treatment. Carriers determine allowed charges, based on the customary charge by the individual provider for the specific service and on prevailing charges in the locality for similar services, for bills submitted to them by physicians or other suppliers of services and pay 80 percent of the allowed charges after an annual deductible ($50 until January 1, 1973, $60 since then) has been met.

Table 32 provides a historical account of the administrative cost experience under Medicare, 1967-73. These data differ from those administrative cost data usually found in tables M-7 and M-8 in each month's *Social Security Bulletin*. *Bulletin* data are from the U.S. Treasury and represent trust fund withdrawals "in the year." The data in table 30 are trust fund withdrawals "for the year" in question. From the point of view of economic analysis, the "for the year" concept is superior to the "in the year" because it indicates when the *real* transfer of resources occurred. For example, total Medicare administrative costs "in the (fiscal) year" 1973 were $439 million, 1/ while administrative costs "for the (fiscal) year" were $494 million. Thus, while only $439 million was actually withdrawn from the trust fund, real administrative resources worth $494 million were actually consumed in that year.

When administrative costs are presented as aggregate sums or as a percentage of program expenditures, Part-B supplementary medical insurance has proved to be more expensive to administer than Part-A hospital insurance. This is not surprising. Under Part B there was a greater absolute number of claims--54 million as opposed to 17.4 million bills for Part A in 1972--and the average amount claimed is much less under Part B than Part A. "Claims" are used rather than "bills" as the unit of output because data are collected differently for Part B and Part A by the Bureau of Health Insurance (BHI). A "claim" is defined as a request for payment for services rendered to a beneficiary, regardless of the number of suppliers or services involved. A "bill" is a narrower concept in that several bills could be included in a claim.

A shown in tables 33 and 34, between 1968 and 1972 the number of Part-A bills grew at an average annual rate of 4.7 percent while the comparable figure for Part-B claims was 12.4 percent. There is evidence that physicians are submitting claims more quickly and frequently to assure faster payment by the program. For example, early in the program, a physician often let a patient's bills accumulate for a month before submitting a

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1/ *Social Security Bulletin*, March 1974, tables M-7 and M-8, pp. 52-3.

possible to maintain that a small portion of the allocation of costs to
Medicare, and between HI and SMI, by various offices involved in its
functioning is an arbitrary process, especially the allocation of over-
head. Most business firms, however, as well as Government agencies,
face the same problem is allocating costs to a particular product or
program. Rules of thumb are usually developed. 6/ Educated estimates
by key employees are usually made and strict accounting procedures are
followed. At worst, internal competition for funds ought to bring about
a reasonable allocation of costs; one manager might protest vigorously
if costs were unfairly imputed to his branch by other branch managers.

Possibly Medicare administrative costs are artificially low because ie
fair rental value of Government buildings is not included in Medicare
costs and the Government does not depreciate its capital goods. This is
only partially true, because the Government does rent some of its office
space, 7/ and such rent is included in the cost of Medicare where ap-
plicable. Moreover, remember that intermediaries bear the preponderant
burden of Medicare administration, and they *do* include rents and depre-
ciation in the costs that they report to SSA for reimbursement.

It has also been suggested that Medicare's true administrative costs are
understated because the amount of congressional time spent on hearings,
investigations, and legislation pertaining to Medicare are not included
in Medicare administrative costs. We did not attempt such a refinemer.
of the cost computations for two reasons. First, there is no logical
place to draw the line for equalization. For example, if congressional
time were included in Medicare administrative costs, then the time spent
by State insurance commissions and by State lawmakers on State laws and
regulations pertaining to health insurance should be included in the
administrative costs of Blue Cross-Blue Shield and the commercial health
insurers. Second, it would be impossible, as a practical matter, to
compute these costs.

Administrative Cost Per Enrollee and Per Bill

In addition to the administrative costs to premiums and claims costs
ratios already discussed, it is also possible to analyze Medicare per
enrollee and per bill. Since these two measures are not a function of
the size of the denominators, claims costs, or premiums (which themselves
are a function of the amount of medical care consumed and the price of
care), we can view administrative costs from a different perspective. 8/

6/ The economist's preferred rule for allocating such costs is to
do so on the basis of marginal revenues. It is open to question whether
this procedure is approximated by real firms or governments.

7/ For example, SSA rents the building space in which most of this
study was conducted and written from a private real estate firm.

8/ R. J. Weiss and others, "Trends in Health Insurance Operating
Expenses," *New England Journal of Medicine,* Sept. 28, 1972, pp. 638-42.

claim to Medicare or to the patient; now, he often submits claims weekly or biweekly. BHI data indicate that the number of services per claim has diminished over time. Also, 1969 was the year in which a number of States brought title XIX (Medicaid) into the title XVIII (Medicare) program. Under the provisions of these titles, the States pay the Medicare, Part B, premiums for the medically indigent aged. Title XIX encourages a more frequent submission of physician claims. For Part A the intermediaries deal primarily with the hospitals, and the average hospital bill is larger than the average physician bill. SMI, on the other hand, reimburses primarily for the services of individual physicians. The combined administrative expenses of the intermediaries and Government for Medicare ranged from 4.6 percent to 5.2 percent of expenditures between fiscal years 1967 and 1973. As pointed out, these figures are lower than those for the commercial health insurers and Blue Cross-Blue Shield. One important reason this particular measure is lower for Medicare is that the aged become ill more frequently than the rest of the population 2/ and, consequently, have larger average annual medical expenditures. 3/ If the administrative costs for a large annual medical bill are not much greater than the administrative costs for a smaller annual bill, administrative costs will represent a much larger proportion of the smaller annual bill amount. 4/

Another equally important reason for the lower ratio of Medicare administrative costs to benefits is that the uniformity of the Medicare program makes handling its health insurance product easier than dealing with the multiple benefit packages often offered by the commercials and Blue Cross-Blue Shield. Furthermore, the commercial insurers incur large selling and underwriting costs for individual health insurance.

Table 32 contains a more detailed presentation of Medicare's administrative costs by administrative entity for fiscal year 1971. 5/ It is

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2/ Cf. U.S. Dept. of Health, Education, and Welfare, Public Health Service, *Age Patterns in Medical Care, Illness and Disability--United States July 1963-June 1965* (Washington: National Center for Health Statistics, 1966), Series 10, No. 32 (1966), table 1.

3/ Barbara S. Cooper and Nancy L. Worthington, "Age Differences in Medical Care Spending--Fiscal Year 1972," *Social Security Bulletin,* May 1973.

4/ See John Krizay, "Does the Social Security Administration Really Run Medicare on Two Percent of Income?" *Perspective,* 4th quarter, 1972, pp. 12-16, and inserted in the *Congressional Record,* June 7, 1973, p. F10602; and "Health Insurance: Can the Government Do It Cheaper?" *Bests Review,* January 1973, p. 15.

5/ A detailed description of the activities listed in table 32 can be found in Ronald J. Vogel and Roger D. Blair, "An Analysis of Medicare Administrative Costs." *Social Security Bulletin,* August 1974, pp. 7-9.

Table 34 contains annual data for the combined HI and SMI programs per enrollee and for the HI and SMI programs separately. Table 35 also contains the percentage change in each item, 1967-73 and 1968-73 as well as yearly percentage changes. Benefits per enrollee have increase at a faster rate than administrative expenses per enrollee under both HI and SMI if 1967 is used as a base year. Year by year, however, these changes have been uneven. Note the large increase in benefits per enrollee and administrative cost per enrollee that occurred between 1967-68, particularly under SMI. At the outset of the Medicare program there was a considerable lag before bills were submitted and processed for reimbursement. Benefit and administrative cost figures for 1968 reflect much of the catchup for 1967. 9/ Furthermore, intermediary and carrier administrative costs per enrollee have increased more rapidly than the Government's, with the cost increase differential being greater under the HI program. Again, though, the largest administrative cost increase per enrollee occurred between 1967 and 1968 for the intermediaries and carriers, when the catchup for 1967 arrived. Since 1968, the annual percentage change in administrative costs per enrollee has been about 13 percent, although it was 19.3 percent between 1968-69 and dropped to 3.4 percent in 1971-72.

The contents of tables 36 and 37 follow the pattern described above: after a slow initial response claims pick up.

Witness the 1967-68 percentage changes. The annual increase in benefits slowed down as the most pressing needs of beneficiaries were met. As claims are submitted with a lag, the administrative mechanism needs time to consolidate itself, and then rates of increase in administrative costs also slow down. Using 1968 as a base year, we found that administrative costs per enrollee had been growing more rapidly than benefits per enrollees. Several factors account for the difference in growth rates. One is the aforementioned lag in benefit payment. And, as mounting benefit payments attracted closer congressional scrutiny and executive department interest in cost control, more emphasis was placed on careful monitoring of provider bills to reduce the rate of increase in benefit payments.

Additional burdens were placed on the administrative system by amendments on utilization review, capital controls, and generally more paperwork to justify the payment of bills and interim cost payments, These led quite naturally to accelerated increase in administrative costs and to a deceleration in the rate of growth of benefit payments. Since percentage changes over time are a function of both the base year chosen and the terminal year, it is difficult to draw inferences without additional information as to what changed over time. Evidence will be presented below which shows that monitoring activities have increased considerably.

9/ For a more detailed analysis of this phenomenon see, Howard West, "Five Years of Medicare--A Statistical Review," *Social Security Bulletin,* December 1971.

Table 33 contains further data on intermediary operating statistics be-
tween fiscal years 1968 and 1972. Comparable data for the carriers are
analyzed separately because of the differences in their tasks under Medi-
care. The largest average annual percentage increases in this table are
all related to provider auditing. Between those years the total number
of bills processed increased at an average annual rate of 4.1 percent,
while total intermediary administrative costs increased at an average
annual rate of 18.7 percent. 10/ Even though provider audit costs
peaked at $35.6 million in 1970, they still showed an average annual rate
of increase of 27 percent during the 5-year period. Since provider audit
costs constituted almost 30 percent of all administrative costs in 1972,
it is obvious that emphasis is being placed on the correctness of hospi-
tal costs-accounting under Medicare, Part A. 11/

Of the $54.7 million increase in total administrative costs during that
period, $11.4 million 12/ can be attributed to the increased volume of
bills, $19.2 million to an increase in audit activity, and the remaining
$24.4 million to the increased costs of resources allocated to claims.
Table 33 indicates that the average salary which the intermediaries paid
their employees increased at an average annual rate of 10.3 percent dur-
ing 1969-72, while employee productivity declined by 3.2 percent annually.
But a decline in productivity so measured is not without ambiguity. The
amount of manpower allocated to provider audit increased at an average
annual rate of 44 percent. Assuming that this increase audit activity
led to better cost allocation in the hospitals and thus to more appro-
priate Medicare reimbursement to the hospitals, this allocation may be
one reason the amount of benefits paid under the program did not increase
even more rapidly. Bills processed per employee decreased at an average
annual rate of 1.3 percent if provider audit activity is not included.
Labor costs per bill increased at average annual rates of 34 percent, or
9.7 percent during 1969-72, depending on whether or not the audit acti-
vity is included.

Table 34 contains Part-B carrier operating statistics for 1968-72. Dur-
ing those years, the number of claims processed increased at an average
annual rate of 12.4 percent, while benefits paid only increased at an
average annual rate of 10.4 percent. As a consequence, benefits per
claim actually declined by 1.9 percent per year. Claims processed under
Part B have increased at almost 2.5 times the rate of bills processed
under Part A over the 4 years. Under Part A, benefits have gone up at

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10/ Do not contain any Government administrative costs.
11/ The decrease in provider audit, 1970-72, was due to cost-bene-
fit analyses on the audit function. The decision was made to reduce the
number of full audits where appropriate hospital cost allocation had
taken place.
12/ Obtained by multiplying the change in the number of bills pro-
cessed, 1968-72, by the unit cost per bill in 1968.

an average annual rate of 14 percent; under Part B, they went up more slowly, by 10.4 percent. This result could have been expected because inflation has been greatest in the hospital sector of the medical care market. As with Part A, administrative costs increased more rapidly than benefits paid. Administrative costs per claim, however, remained stable during these 5 years, and the number of claims processed per employee actually increased at an average annual rate of 8.5 percent. As pointed out, Part-A results showed a slight decrease in productivity when so measured. Furthermore, the labor cost per claim actually dropped by 2.8 percent per year, 1969-72, even though the average salary went up by 7.6 percent annually.

A comparison of figures 3 and 4 gives some insight into why Part-A and Part-B operating statistics differ in important respects. The data are graphed on an administrative cost per bill and per claim basis, and unit costs for the components of administrative costs are presented. Although Part-B administrative costs appear to be higher than Part A's when expressed as a percentage of benefits paid or per enrollee, they are lower on a unit basis. This is not paradoxical precisely because Part-A benefits were almost three times higher than Part B's in 1972. Again, remember the difficulties of making efficiency comparisons even within the Medicare program. If the "output" of Medicare were "number of claims paid," Part B might appear to be more efficient. If Medicare "output" were "total benefits paid," that is, payments to protect the insurer's wealth or "payments per persons enrolled," Part A might appear as more efficient.

About 30 percent of Part-A administrative costs covers provider audit and utilization review, and they are the costs that have increased the most rapidly over the 5 years. These functions are important because they should contribute to the quality of the program and may help to keep total program costs down. 13/

Part-B administrative tasks, on the other hand, are more claims specific. Although labor costs have increased, large expenditures on electronic data-processing equipment have been able to offset them. With the exception of data-processing costs, most of the components of Part-B administrative costs have remained relatively stable per claim. Because auditing and utilization review are more labor intensive and demand more skill than Part-B production-type activities, Part-A administrative costs should be larger than Part B's per claim.

13/ The optimal level of audits is reached when the marginal cost of the audit equals the marginal saving in preventing an unallowable cost. This indicates that the optimal amount of unallowable costs in not 0 from an economist's point of view.
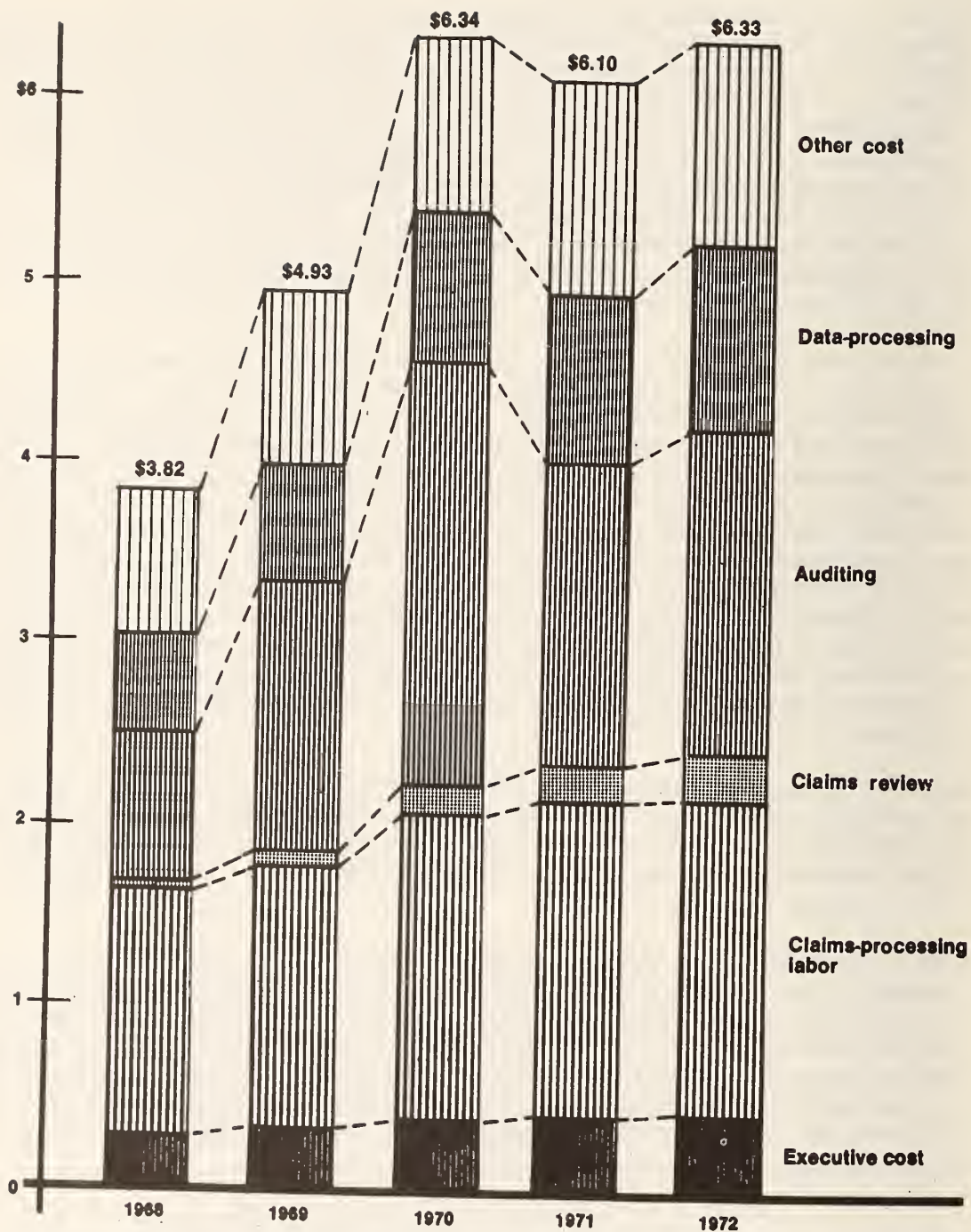
Figure 3 - Components of average administrative cost per bill, Medicare, Part A, 1968-72
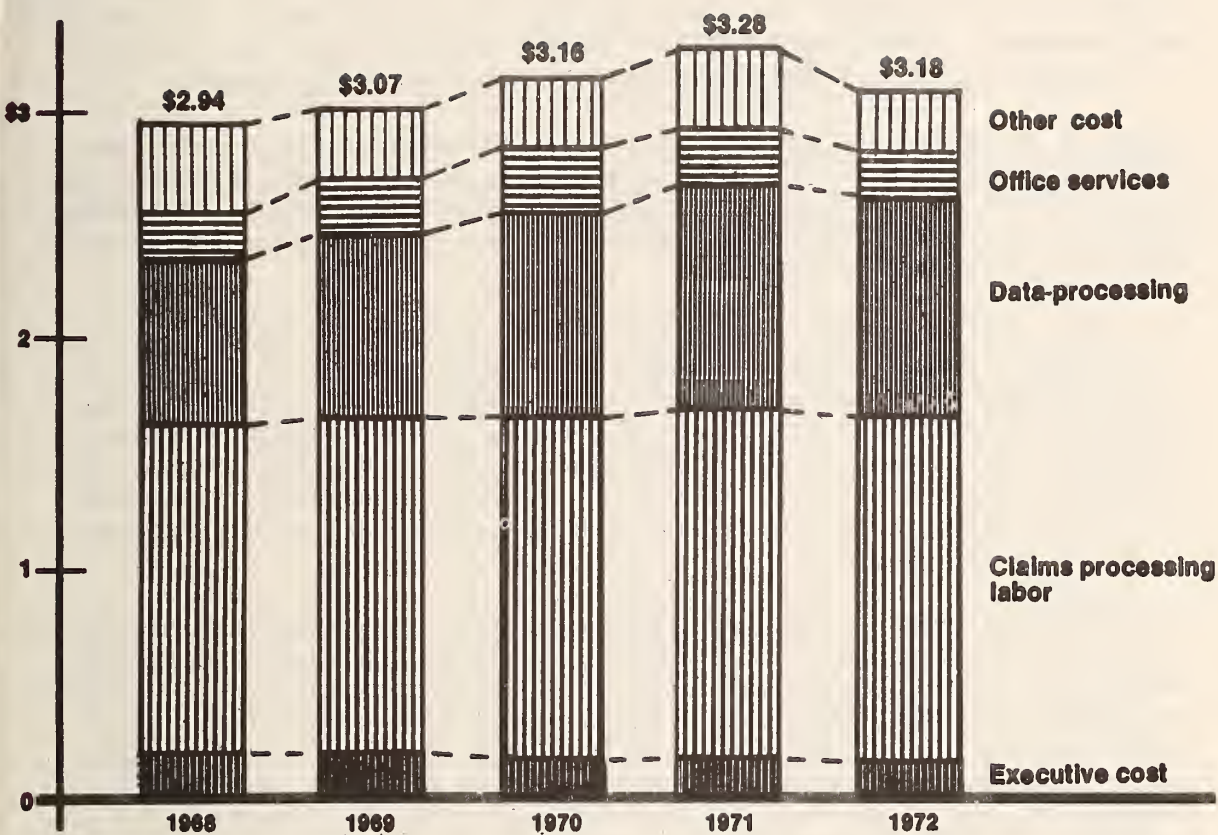
Figure 4 - Components of average administrative cost per claim, Medicare, Part B, 1968-72

Fiscal Agent Involvement in Medicare

Tables 35-37 indicate the extent to which fiscal agents are involved with Medicare. Data for Blue Cross-Blue Shield and for the commercial insurers are released by calendar year; data for Medicare by fiscal year. To make the data compatible, Medicare data for fiscal years 1971 and 1972 were averaged. Enrollment data for States with multiple intermediaries (for example, New York and Pennsylvania) are presented statewide.

Strictly speaking, an intermediary or carrier does not have enrollees. When a Medicare beneficiary uses a hospital, the hospital is reimbursed by Blue Cross or a intermediary such as a commercial insurer, depending on who is its intermediary. As explained earlier, carriers are assigned specific geographic areas.

The Blue Cross intermediaries serve 74.9 million people under their regular business and 20.4 million people under Medicare, or 27 percent of their regular enrollment. For many of the Blue Cross intermediaries, Medicare *benefits* as a percentage of regular business *benefits* (claims) are quite substantial; in a large proportion of cases they exceed 100 percent of regular business benefits. The Seattle, Jacksonville, and Great Falls plans have the largest Medicare enrollment as a percentage of their regular business.

While the mean Medicare administrative expense as a percentage of regular administrative expense is 18.4 percent, there is substantial variation around that mean, because some Blue Cross intermediaries are more efficient than others and, especially, because some Blue Cross plans pay a larger percentage of Medicare benefits to regular benefits than others. Also, six Blue Cross and Blue Shield plans are merged. For example, Birmingham, Ala., has a merged Blue Cross-Blue Shield. Medicare Part-A and Part-B figures expressed as a percentage of Alabama's regular business will be distorted in relation to figures for, say, Topeka, Kan., where Blue Cross and Blue Shield are separate. Further, some Blue Cross plans have been more successful than others in selling coverage complementary to Medicare to the elderly. Complementary coverage is included in regular-business statistics.

The 31 Blue Shield plans which are carriers under Medicare, Part B, have an average Medicare enrollment coverage as a percentage of regular coverage of 22.5 percent. Medicare benefit payments as a percentage of regular benefit payments average 60.6 percent, but there is substantial variation among the plans. For example, the ratio for Jacksonville is 368.4 percent, while it is only 20.1 percent for Birmingham. The average Medicare administrative expense as a percentage of regular administrative expense is 45.6 percent. This ratio is higher than the comparable figure for the Blue Cross intermediaries because regular Blue Shield business is less comparable to Part B than regular Blue Cross business is to Part A. Regular Blue Shield does not have so many small bills as Medicare, Part B, because there is less outpatient coverage under its regular busi-

ness. Of the 13 commerical intermediaries and carriers for which data
are available, only three had Medicare benefits exceeding 50 percent of
regular benefits in 1971, and all three were relatively small health in-
surers. As with the Blue Cross-Blue Shield plans, administrative costs
of Medicare as a percentage of regular administrative costs varied sub-
stantially.

Theory of Fiduciary Involvement in Medicare Administration

As explained earlier in this chapter, the intermediaries under Medicare,
Part A, and the carriers under Medicare, Part B, are reimbursed for their
administrative duties at cost. If the reimbursement mechanism is tightly
controlled, the intermediaries and carriers cannot allocate any of their
own-business costs to Medicare costs. This seems to preclude their gain-
ing any advantage by acquiring intermediary or carrier status. But
tables 35-40 reveal that these fiscal agents are deeply involved with
Medicare. Thus, the Government has had little difficulty in finding
firms to handle a significant increase in their administrative workload.
Their willingness clearly makes economic sense, if these fiscal agents
experience economies of scale in the administration of health insurance.

Consider figure 5, which depicts the average *(AC)* and marginal costs
(MC) of administering health insurance in the presence of economies of
scale. Suppose that the number of claims for the firm's own business
is given by *OI* and the average costs of administering this volume of
claims is *OA*. The total cost of administration is then *OADI*. If the
firm obtains status as a Medicare fiscal agent, the number of claims
expands to *OJ*. Because of the presence of economies of scale, average
cost falls *(OB)*. Total administrative costs are now given by *OBEJ*. Be-
cause the *AC* curve includes a normal return on the firm's investment, the
firm cannot charge Medicare the full total cost of the Medicare claims,
which is represented by *IGEJ*. The rules for reimbursement 14/ may only
allow a charge to Medicare of *IHEJ*. But as long as *BADG*, the cost sav-
ing on its own business, exceeds *HGEF*, the uncompensated portion of
total costs due to the Medicare claims, the firm will realize a net cost
saving and, therefore, an increase in profits or reserves. Therefore,
it is quite possible that a firm is more than willing to because a fidu-
ciary under Medicare.

The above argument holds equally well for nonprofit firms. As explained
in chapter 5, the Blues do compete with the commercial companies for
customers and even though they enjoy competitive advantages, they should

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14/ The actual rules for reimbursement are spelled out in some
detail in "Principles of Reimbursement for Administrative Costs of U.S.
Department of Health, Education and Welfare," Social Security Administra-
tion, *Health Insurance for the Aged, Part 1, Administration: Part B
Intermediary Manual*, HIM 14-1 (8-67), reprinted May 1972.
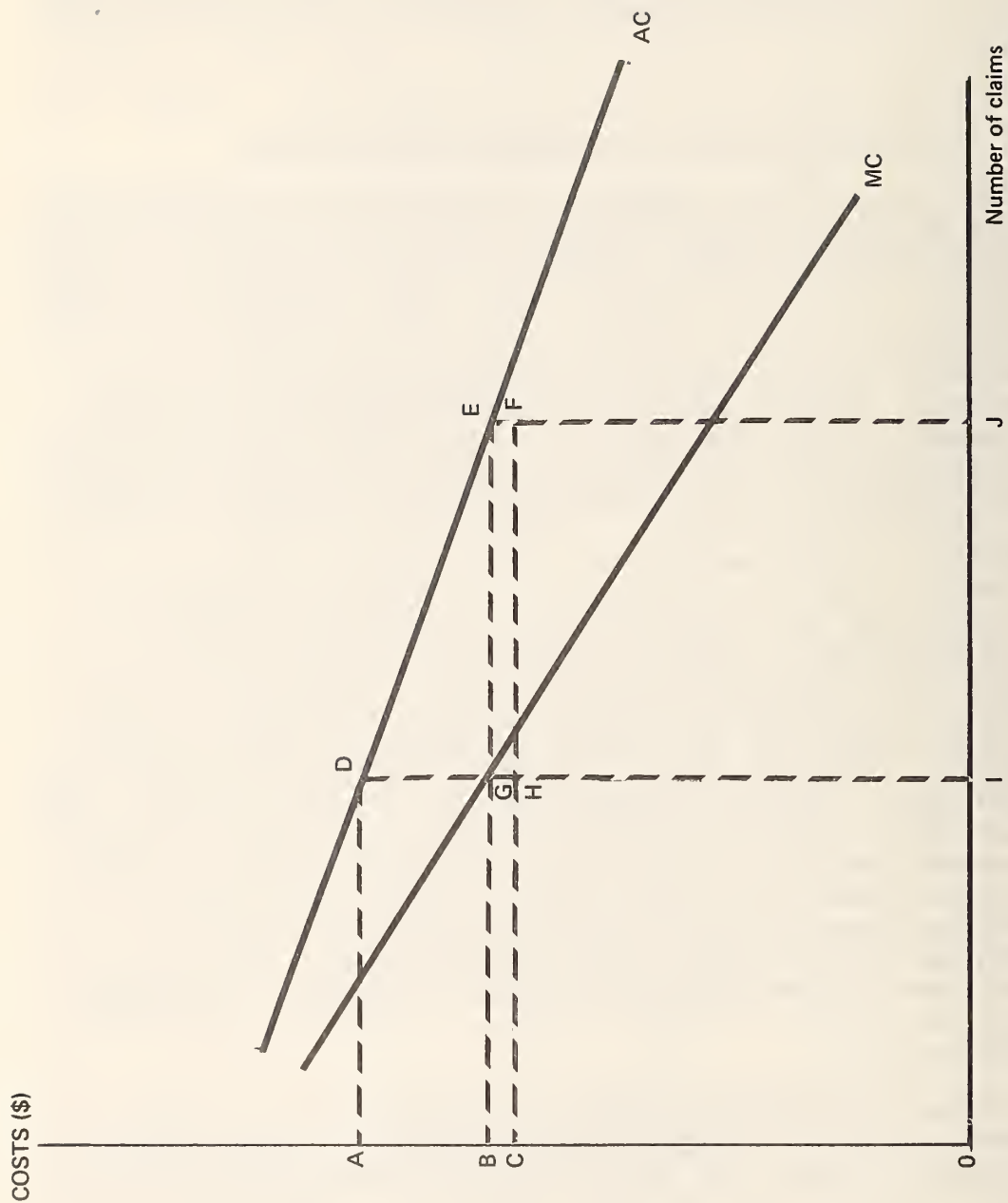
COSTS ($)

Figure 5 - Average and Marginal costs of administration

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have incentive to attain technical efficiency. If they can achieve econ-
omies of scale by taking on a greater volume of business through the
Medicare program, they should want to become intermediaries and carri-
ers. 15/

Chapter 5 reports that the Blues have not taken advantage of potential
economies of scale in their own business and cannot be expected to have
them in other operations. But there are other reasons for desiring to
be a Medicare intermediary or carrier: an improved marketing position
for selling health insurance supplementary to Medicare to the aged; the
information on provider costs gained from the audit responsibility may
be carried over to help save money in regular business; the opportunity
to acquire sophisticated management systems; and the good will and pres-
tige engendered by Government services.

A final explanation for fiduciary participation in Medicare comes from
the nature of the administrative cost reimbursement method. Consider
figure 6. Panel A represents Blue Cross-Blue Shield regular business.
AC_1 is the cost function that would prevail were there no Medicare. Be-
cause Medicare reimburses all administrative costs, there is no incentive
to minimize Medicare administrative costs. In fact, the incentive is to
maximize Medicare administrative costs, subject to the constraints of
reimbursement rules. If the rules are loosely drawn or interpreted, some
regular business administrative costs might be pushed onto Medicare ad-
ministrative costs. For example, on paper, more executive time might
be allocated to Medicare than is actually used, or the Medicare program
might be used as a training program for regular-business employees. If
such practices do occur, the regular business cost function would tend
to shift downward to AC_2 and this is the cost function that would be
observed. In panel B, the observable Medicare cost function would be
AC_1. Such an explanation for the transfer of administrative costs be-
tween the two segments of business has an economic rational: lower ad-
ministrative costs in regular business makes regular business more com-
petitive with other health insurance. And there is no market penalty
for having high Medicare administrative costs, especially if everyone

15/ This view implies that the Blue Cross-Blue Shield plans try to
maximize market share rather than profits.

COSTS ($)

(A)
REGULAR BUSINESS

AC1
AC2

Claims

COSTS ($)

(B)
MEDICARE BUSINESS

AC2
AC1

Claims
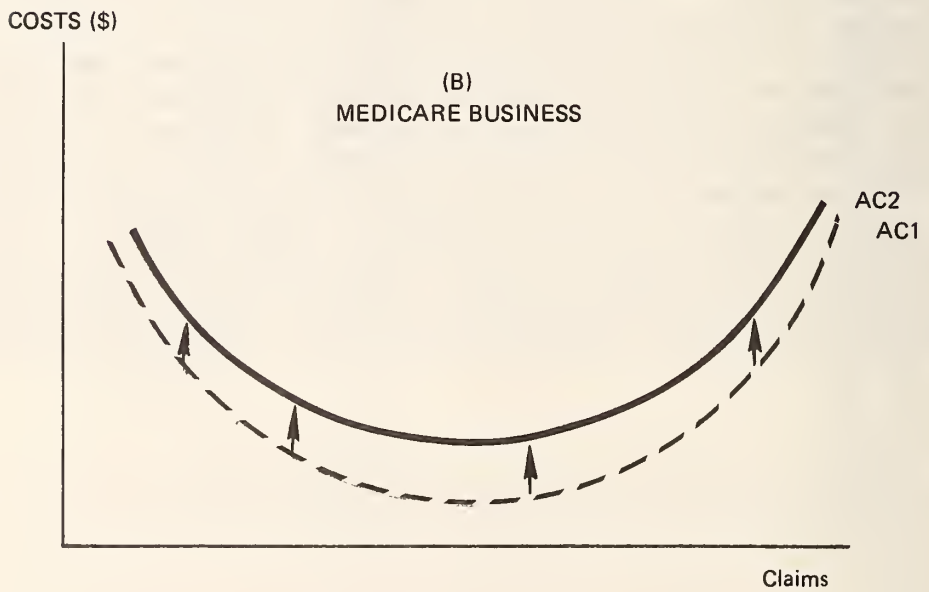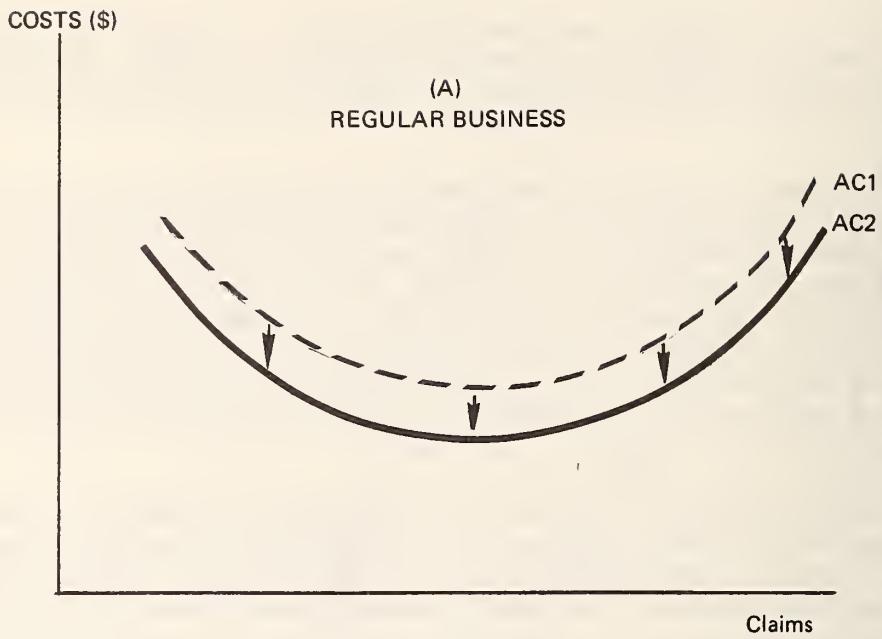
Figure 6 - Possible Medicare cost functions

else also has them. Further, it is generally conceded that costs or
cost-plus reimbursement often invites increased costs. 16/

For these reasons we expected our cost estimates for Medicare would not
be as successful as they were for the commercial insurers, and we have
no assurance that the observable Medicare cost function is the true cost
function.

Empirical Analysis of Intermediaries

There is a high positive correlation between the percentage of bills re-
ceived from extended care facilities and unit administrative costs. This
phenomenon is due to a greater amount of adjudication for extended-care
facility (ECF) bills and greater owner and employee turnover in the ECF.
Further, the commercial intermediaries have the highest percentage of
ECF bills. It was decided that the payment of a preponderant amount of
ECF bills was different "output" under the Medicare program and, there-
fore, the commercial intermediaries are not included in the Medicare
regression model used here. 17/ The data used are for fiscal year 1971.

As with the Blue Cross equation in chapter 5, we used two concepts of
the dependent variable. One dependent variable is Medicare administra-
tive cost divided by Medicare administrative costs and benefit payments.
Because Medicare, Part A, intermediaries do not have enrollees, we could
not use administrative costs per enrollee as in the Blue Cross equations
in chapter 5. We, therefore, used Medicare administrative costs divided
by the number of Medicare, Part-A, claims. SSA provides a breakdown of
administrative costs by provider audit costs and all administrative costs
other than provider audit costs. To ascertain if our independent varia-
bles could explain variations in these two components of administrative

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16/ See Robert Perry and others, *System Acquisition Strategies*,
R-733-PR/ARPA, RAND Corporation, June 1971; M. J. Peck and F. M. Scherer,
The Weapons Acquisition Process: An Economic Analysis (Cambridge:
Harvard University Press, 1962); F. M. Scherer, *The Weapons Acquisition
Process: Economic Incentives* (Cambridge: Harvard University Press,
1964); Comptroller General of the United States, General Accounting
Office, *Acquisition of Major Weapon Systems*, Mar. 18, 1971; F. M. Scherer,
"The Aerospace Industry," in Walter Adams, ed., *The Structure of American
Industry* (New York: Macmillian Company, 1971), pp. 335-79; Frederick
T. Moore, *Military Procurement and Contracting: An Economic Analysis*,
RAND Corporation, RM-2948-PR, 1962; hearings before the Subcommittee on
Priorities and Economy in Government of the Joint Economic Committee,
Congress of the United States, *The Acquisition of Weapons Systems*, pt.
7, Nov. 14-16, 1973.
17/ When a regression model including the commercials and the ECF
variables was run, the ECF variable so swamped the other independent
variables that the results were open to questionable interpretation.

costs, we also used as dependent variables provider audit costs divided by Medicare benefits paid and all administrative costs other than provider audit costs divided by Medicare benefits paid.

As with the commercials and Blues under their regular business, the size of the firm was expected to make a difference in operating costs. Because the size variable had no effect under regular Blue Cross business, we did not expect to affect Medicare business operating results either. Accordingly, we included the size variable, defined, as previously, as total claims under all lines of business. Given the findings of economies of scale for commercial insurers (chapter 4), but also given the fact that we could find no economies of scale for Blue Cross regular business in (chapter 5), we had no way of knowing what the sign of the size variable would be in the Medicare equations, nor could we be sure that the size variable would be significant.

We expected some economies from specialization and, there, included the independent variable, Medicare claims as a percentage of total claims. To the extent that an intermediary specializes in handling Medicare claims, we expected the coefficient on this variable to be negative. For the same reason, we have used Federal employees plan claims as a percentage of total claims. To the extent that an intermediary handles the large *uniform* FEP program, it should be more efficient in dealing with Medicare because the FEP program is similar to Medicare. Accordingly, we expected the sign of the coefficient on this variable to be negative.

Labor market conditions vary around the country, as do the cost of living and levels of education of the labor force. To capture these highly intercorrelated influences on labor costs and thus operating costs, we used as an independent variable the average salary the intermediaries paid their Medicare employees. We expected salaries to be high for the reason given, and thus Medicare operating costs, too! The average size of a claim also ought to affect the level of operating costs, although this effect would differ, depending on which definition of the dependent variable is used. If the cost of administering a claim does not rise so rapidly as the amount of the claim, the Medicare average claim size should be signed negatively in comparison to operating costs as a percentage of operating costs plus benefits paid. When operating costs divided by the number of claims is the dependent variable, the sign of the Medicare average claim size should be positive, even if the cost of administering a claim does not rise so rapidly as the amount. Larger claims should demand more labor time and processing, driving up operating costs divided by the number of claims. But, because the amount of the claim size is contained in the denominator of the first dependent variable, larger claims should lower it.

The number of claims submitted by the providers of medical care to the aged also ought to influence the level of operating costs. We, therefore, used the number of claims per provider as an independent variable. The sign of the coefficient of this variable ought to be negative because the

more claims submitted per provider the more provider specialization in bill submission possible, and there should be less error in billing. Finally, ECF bills are more expensive to administer than hospital bills, and so we included the proportion of Medicare bills from ECF. The sign of the coefficient on this variable should be positive. These were thought to be the most important factors explaining variations in the administrative costs of the intermediaries. To estimate this relationship, we used unpublished SSA data. The regression results are presented in tables 41 and 42.

The regression results are disappointing because none of the regression models explains more than 33 percent of the variation in Medicare administration costs. 18/ As in the Blue Cross regular business equations, the size variable has a positive sign and is statistically significant at conventional levels in three of the eight equations. One interpretation of the positive sign on the size coefficient is that large intermediaries are less efficient than small ones. This interpretation is difficult to accept because of findings of economies of scale in other studies of other parts of the insurance industry. Clearly, further research must be done on this issue.

The Medicare average claim size variable has the expected sign for the two different dependent variables and is statistically significant at the .01 level in most equation. Medicare average claim size is not significant in the seventh equation. This also was to be expected because the provider audit function is not related to the claims process. The coefficient of the number of claims per provider has the expected sign but is barely significant in most equations. The coefficient of the salary variable has the expected sign, while the coefficient on Medicare claims as a percentage of total claims has a sign opposite of that expected. But the T value on the salary variable indicates that there is no reason to believe that the value of its coefficient is not 0. In general, the coefficients of Medicare claims as a percentage of total claims and ECF claims as a percentage of Medicare claims are of the expected sign but are not statistically significant.

Empirical Analysis of Carriers

As in the Medicare, Part A, equations, we used operating costs divided by operating costs plus benefits and operating costs divided by the number of bills as dependent variables. Furthermore, because Medicare,

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18/ Provider characteristics such as average bed size, percent State and local hospitals, percent teaching hospitals, and patient characteristics such as percent over age 75, black, and below the poverty line were also used in regressions not presented here. Results using these independent variables were equally disappointing.

Part B, carriers do service definite geographical areas, one may properly say that they do have enrollees. Therefore, we also used Medicare administrative costs per enrollee as a dependent variable. We included size and size squared, with the expectation that the size of the carrier would make a difference in the level of administrative costs. Again, though, given experience with this variable in the Blue Cross-Blue Shield equations, we were pessimistic about its efficacy in explaining variations in administrative costs. 19/

Because of the possibility of fraud in the Medicare payment process, it is necessary to investigate the validity of a certain proportion of the claims submitted for payment. Since such investigation adds to the administrative costs of the program, the higher the percentage of claims investigated, the higher a carrier's administrative costs should be relative to other carriers.

The carriers number among their ranks both nonprofit Blue Shield plans and profit-seeking commercial firms. Since it would be of great interest to know whether there is any difference between their operating costs, we included firm type. We used a dummy variable, with a value of 1 for a commercial carrier and of 0 otherwise. Although any a priori expectation as to the sign of the coefficient on the firm type variable was open to argument, we felt that a profit-seeking firm would be more likely to minimize costs. Thus, we expected a negative coefficient on this variable. Because some of the commercial carriers handle Medicare claims in two or three States, with payment centers in each, we used a dummy variable with a value of 1 for the payment centers of those commercials and of 0 otherwise. We had no way of knowing what the sign of the coefficient of this variable would be.

The size of the claims that the carrier pays ought to affect its level of operating costs. As in the intermediary equations, we used the Medicare average claim size as an independent variable. When the dependent variable is operating costs divided by operating costs plus benefits paid its coefficient should be negative; when the dependent variable is operating costs divided by the number of bills, its coefficient should be positive for the same reasons outlined in the intermediary empirical analysis. The more claims submitted per provider the more specialization in billing is possible. Thus, we included number of claims per physician as an independent variable. The coefficient on this variable ought to be negative.

If the physician does not accept assignment from the carrier, the beneficiary must pay the bill himself and then submit a claim to the carrier

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19/ The definition of this size variable is different from the other equations because we have no data on regular business claims of the commercial carriers. Accordingly, we used benefits paid under the Medicare program as the size variable.

for reimbursement. To the extent that the physician submitted bills on which he has accepted assignment, the bills would have been filed by his office. Accordingly, assigned bills might have a greater probability of being correct than unassigned bills and cause less work for the carrier. We, therefore, included the percentage of claims that were assigned as an independent variable and expected its sign to be negative.

Carriers are using four different types of data-processing systems. These have been designated by the SSA as "own system," "model system," "Applied System Development Corporation," and "electronic data-processing system." SSA has recommended the "model system" as the one that will insure the most satisfactory handling of claims. We included dummy variables in the regression equation to determine the effects of the different data-processing systems on unit costs. 20/

Finally, the level of per capita income in an area should affect the type of labor force the carrier would hire and the wages and salaries it would have to pay. Thus, we included the average Medicare employee salary in the regression equation and expected its coefficient to be positive.

The regression results are contained in table 42. The size and operating costs divided by operating costs plus size-squared variables do not affect the dependent variable when benefits paid and operating costs divided by number of bills paid are the dependent variables. However, size and size squared are statistically significant in equation 4 with operating costs per enrollee as the dependent variable, indicating that the size relationship is curvilinear. The firm type variable is consistently negative, indicating that the *commercial carriers have lower administrative costs than the Blue Shield carriers;* but the firm type variable is statistically significant, at least at the 10 percent level in only 3 of the 9 equations. This result is particularly important because this was the first time in this entire study that we were able to hold constant the type of insurance plan being administered and directly compare the Blues with the commercials. The Medicare average claim size variable also has the expected sign but is not statistically significant in all of the equations.

The number of bills per physicians has the expected sign but is not statistically significant. The percentage of bills assigned does not have the expected sign, nor is it statistically significant, while the salary variable performed well in explaining all three concepts of the dependent variable. Equation 4, which had the most explanatory power,

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20/ So formulated, the coefficients measure the differential effects of the "model system," the "own system," and the "Applied Systems Development Corporation" system against those carriers using the EDS system. For a further discussion of dummy variables, cf. J. Johnston, *Econometric Methods* (New York: McGraw-Hill, 1972), 2d ed., pp. 180-81.

indicates that the EDS data-processing system is the most efficient of the four when all other variables are held constant. 21/

Conclusions

We found that when administrative costs are expressed as a percentage of benefits paid or on a per enrollee basis, Medicare, Part B, proved to be more expensive to administer than Part A. In contrast, however, administrative costs per bill were lower under Part B. This seeming paradox is resolved by recognizing that average benefits per bill paid under Part A have been three times those paid under Part B.

Between 1967 and 1968, benefit payments per enrollee increased more rapidly than administrative costs, the most rapid increase occurring between 1967 and 1968. The large percentage increase between those 2 years reflects the considerable lag before bills were submitted and processed for reimbursement. Since then, the administrative system has had time to consolidate itself and rates of increase have been fairly constant. With 1968 as a base, we found that administrative costs per enrollee have increased more rapidly than benefits per enrollee. This phenomenon is due to benefit lags in 1967 and increased expenditures for monitoring the program that simultaneously increased administrative costs and produced a consequent relative reduction in claims paid. Indeed, provider audit and claims review per bill have been the most rapidly growing administrative expenditures under Part A.

Part-B administrative costs per claim have remained relatively stable, despite increased labor costs because Part-B bills more easily lend themselves to electronic data-processing and because provider audits and claims review are not required under the Part-B program.

Medicare business accounts for a significant percentage of intermediary and carrier business, especially for Blue Cross and Blue Shield. The reasons an insurer wants to be a Medicare intermediary or carrier were

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21/ As with the Part-A equations, provider characteristic variables and patient characteristics variables were tried in regressions not reported here. These variables provided no additional explanatory power. The generally low $R2$ and lack of statistical significance of the explanatory variables are consistent with the findings of the Perkins Committee. See *Report to the Secretary of HEW and the Commissioner of the Social Security Administration,* by the Advisory Committee on Medicare Administration, Contracting, and Sucontracting, June 21, 1974 (Washington: U.S. Dept. of Health, Education, and Welfare, June 1974), MAGS-2 (6-74). The Perkins Committee was surprised at the wide variability in Medicare, Part B, administrative costs. We have found that these costs vary much less than Blue Shield regular business costs.

given, and then we tested empirical models of intermediary and carrier costs behavior. As with Blue Cross-Blue Shield regular business, we did not find evidence of economies of scale in their Medicare business with the exception of one Blue Shield equation. Given the current forms of cost reimbursement for administrative functions, the intermediaries and carriers do not have incentives to minimize administrative costs. Indeed, the incentive is in the opposite direction, particularly in the absence of competition.

TABLE 30.--Blue Cross, earned subscription income, claims expenses, and operating expenses, 1960-71

Year	Total membership	Earned subscription income	Claims expenses	Operating expenses	Subscription income per enrollee (3)+(1)	Claims expenses per enrollee (2)+(1)	Operating expenses per enrollee (4)+(1)	Index of (5) value for year average value 1959-1961	Index of (6) value for year average value 1959-1961	Index of (7) value for year average value 1959-1961
1960	56,063,215	$1,783,171,775	$1,654,950,707	$90,821,460	$31.91	$29.52	$1.62	99.4	99.1	98.2
1961	46,469,259	2,011,062,021	1,672,929,270	99,209,103	35.60	33.16	1.76	111.2	111.3	106.7
1962	58,133,290	2,230,746,676	2,103,084,016	107,204,244	38.37	36.18	1.84	119.9	121.4	111.5
1963	59,141,262	2,467,197,393	2,343,231,454	115,227,532	41.72	39.62	1.95	130.3	133.0	118.2
1964	60,615,595	2,731,320,397	2,624,302,497	124,968,615	45.06	43.29	2.06	140.8	145.3	124.3
1965	62,023,356	3,031,470,455	2,887,136,931	134,553,690	48.83	46.55	2.17	152.7	156.2	131.5
1966	63,713,722	3,127,014,039	2,917,963,397	154,773,063	49.02	45.80	2.43	153.3	153.7	147.3
1967	65,725,355	3,276,435,234	3,002,364,275	179,370,329	49.85	45.68	2.71	155.7	153.3	164.2
1968	68,517,332	3,719,627,891	3,579,577,683	212,621,429	54.29	52.23	3.10	169.9	175.3	187.9
1969	71,090,355	4,419,292,095	4,322,333,717	256,227,906	62.16	60.80	3.60	194.2	204.0	315.2
1970	73,535,201	5,335,335,233	5,219,441,358	302,462,973	73.24	70.98	4.11	228.3	238.2	249.1
1971	75,048,794	6,390,126,697	6,053,537,783	338,009,565	85.15	80.66	4.52	266.0	270.7	273.9

Percentage change

Year		Earned subscription income	Claims expenses	Operating expenses	Subscription income per enrollee	Claims expenses per enrollee	Operating expenses per enrollee			
1960-71..		258.4	265.8	273.2	167.7	173.2	179.0			
1960-66..		75.4	76.3	70.4	54.3	55.1	50.0			
1966-71..		104.4	107.5	119.0	73.5	76.1	36.0			

SOURCE: Columns 1, 2, 3, and 4 from Blue Cross-Blue Shield Association, *Blue Cross and Blue Shield Fact Book, 1972.* Columns 5-10 computed from figures contained in mentioned source.

TABLE 31.--Blue Shield earned subscription income, claims expenses, and operating expenses, 1960-71

Year	Total membership	Earned subscription income	Claims expenses	Operating expenses	Subscription income per enrollee (2)+(1)
1960...............	44,492,603	$741,164,152	$670,776,230	$76,244,736	$16.66
1961...............	46,325,554	837,772,845	752,695,184	82,740,697	18.08
1962...............	48,073,019	974,085,675	868,816,031	91,136,349	20.26
1963...............	49,486,734	1,086,355,622	977,142,095	99,662,095	21.95
1964...............	51,356,864	1,209,394,139	1,095,713,474	108,690,625	23.55
1965...............	52,798,117	1,318,914,790	1,190,485,506	115,940,449	24.98
1966...............	54,627,902	1,396,713,859	1,231,425,788	130,547,403	25.57
1967...............	57,151,382	1,496,266,968	1,268,018,421	149,373,186	26.18
1968...............	60,371,013	1,716,691,657	1,487,940,445	180,900,665	28.44
1969...............	63,471,684	2,028,979,211	1,854,147,845	224,621,757	31.97
1970...............	65,530,827	2,333,474,082	2,176,832,438	255,989,539	35.61
1971...............	66,792,721	2,833,730,500	2,548,495,600	297,004,760	42.43
		Percentage change			
1960-71............		282.3	279.9	289.5	154.7
1960-66............		88.4	83.6	71.2	53.5
1966-71............		102.9	107.5	127.5	65.9

Year	Claims expenses per enrollee (3)+(1)	Operating expenses per enrollee (4)+(1)	Index of (5) value for year average value 1959-1961	Index of (6) value for year average value 1959-1961	Index of (7) value for year average value 1959-1961
1960...............	$15.08	$1.71	98.4	98.9	100.0
1961...............	16.25	1.79	106.8	106.5	104.7
1962...............	18.07	1.90	119.7	118.4	111.1
1963...............	19.75	2.01	129.7	129.4	117.5
1964...............	21.34	2.12	139.1	139.3	124.0
1965...............	22.55	2.20	147.5	147.8	128.7
1966...............	22.54	2.39	151.0	147.7	139.8
1967...............	22.19	2.61	154.6	145.4	152.6
1968...............	24.65	3.00	168.0	161.5	175.4
1969...............	29.21	3.54	188.8	191.4	207.0
1970...............	33.22	3.91	210.8	217.7	228.7
1971...............	38.16	4.45	250.6	250.1	260.2
	Percentage change				
1960-71............	153.1	160.2			
1960-66............	49.5	39.8			
1966-71............	69.3	86.2			

SOURCE: Columns 1-4, from Blue Cross-Blue Shield Association, *Blue Cross and Blue Shield Fact Book, 1972*. Columns 5-10 were computed from the mentioned source.

TABLE 32.--Medicare trust fund expenditures: Amount of benefit payments and administrative costs, fiscal years 1967-72

(Amounts in millions)

Fiscal year	Number of enrollees (in thousands)	Total expendi- tures	Benefit payments	Administrative costs					
				Total		Intermediaries		Government	
				Amount	Percent of expendi- tures	Amount	Percent of expendi- tures	Amount	Percent of expendi- tures
HI and SMI									
1967...................	19,115	$3,345	$3,171	$174	5.1	$94	2.8	$80	2.4
1968...................	19,496	5,376	5,126	250	4.7	153	2.9	97	1.8
1969...................	19,815	6,603	6,299	304	4.6	193	2.9	110	1.7
1970...................	20,278	7,133	6,783	350	4.9	234	3.3	116	1.6
1971...................	20,732	7,885	7,478	407	5.2	263	3.4	144	1.8
1972...................	21,150	8,793	8,364	429	4.9	285	3.2	145	1.6
1973...................	21,601	9,534	9,040	494	5.2	310	3.3	184	1.9
HI									
1967...................	19,088	$2,583	$2,508	$75	2.9	$25	1.0	$49	1.9
1968...................	19,465	3,832	3,736	96	2.5	41	1.1	54	1.4
1969...................	19,751	4,708	4,654	114	2.4	56	1.2	57	1.2
1970...................	20,174	4,940	4,804	136	2.7	73	1.5	63	1.3
1971...................	20,588	5,591	5,443	148	2.6	74	1.3	74	1.3
1972...................	20,970	6,279	6,109	170	2.7	90	1.4	79	1.3
1973...................	21,375	6,843	6,649	194	2.9	87	1.3	107	1.6
SMI									
1967...................	17,750	$762	$663	$99	12.4	$8	8.5	$31	3.9
1968...................	18,021	1,545	1,390	155	10.1	112	7.3	43	2.8
1969...................	18,885	1,835	1,645	190	10.3	137	7.4	53	2.9
1970...................	19,329	2,193	1,979	214	9.7	161	7.3	53	2.4
1971...................	19,739	2,294	2,035	259	11.3	190	8.3	69	3.0
1972...................	20,150	2,514	2,255	259	10.2	195	7.7	65	2.6
1973...................	20,545	2,691	2,391	300	11.4	223	8.5	77	2.9

SOURCE: Unpublished U.S. Dept. of the Treasury data.

TABLE 33.--Hospital insurance intermediary operating statistics, 1968-72

Item	1968	1969	1970	1971	1972	Average annual percentage change, 1968-72
Benefit payments:						
Total amount (in millions).......	$3,727	$4,638	$5,017	$5,587	$6,288	14.0
Per bill.........................	$256.72	$301.72	$320.17	$341.51	$361.21	8.9
Administrative costs:						
Total amount (in millions).......	$55.4	$75.8	$99.4	$99.9	$110.1	18.7
Provider audit.................	12.2	22.6	35.6	27.0	31.4	27.0
Other..........................	43.2	53.2	63.8	72.9	78.7	16.2
Per bill.........................	$3.82	$4.93	$6.34	$6.04	$6.33	13.5
Provider audit.................	84	1.47	2.27	1.59	1.81	21.0
Other..........................	2.98	3.46	4.07	4.45	4.52	11.0
Average annual salary per employee.	(1/)	$6,947	$7,671	$8,556	$9,335	2/10.3
Provider audit...................	(1/)	9,651	10,100	10,379	11,757	2/6.8
Other............................	(1/)	6,638	7,260	8,128	8,808	2/9.9
Labor cost per bill...............	(1/)	$2.72	$3.38	$3.57	$4.02	2/13.9
Without audit....................	(1/)	2.33	2.73	3.01	3.08	2/9.7
Provider audit...................	(1/)	.39	.65	.56	.94	2/34.0
Bills processed (in millions)......	14.5	15.4	15.7	16.4	17.4	4.7
Per employee (per year)..........	2,828.04	2,552.73	2,266.64	2,276.68	2,327.44	4.9
Per employee without audit.......	3,013.30	2,849.74	2,655.62	2,703.15	2,855.74	-1.3
Average annual manpower (number of						
persons).........................	5,134	6,022	6,913	7,186	7,480	9.9
Provider audit...................	322	618	1,001	1,119	1,387	44.0
Other............................	4,812	5,404	5,912	6,067	6,093	6.1

1/ Data not available.
2/ Computed for 1969-72.

SOURCE: Unpublished SSA data.

TABLE 34.--Supplementary medical insurance carrier operating statistics, 1968-72

Item	1968	1969	1970	1971	1972	Average annual percentage change, 1968-72
Benefit payments:						
Total amount (in millions)........	$1,319	$1,510	$1,652	$1,775	$1,958	10.4
Per claim........................	$39.02	$39.12	$37.80	$36.45	$36.36	-1.9
Administrative costs:						
Total amount (in millions)........	$99.4	$118.4	$138.1	$159.9	$171.8	14.7
Per claim........................	$2.94	$3.07	$3.16	$3.28	$3.18	2.0
Average annual salary per employee.	(1/)	$6,077	$6,507	$7,136	$7,568	2/7.6
Labor costs per claim.............	(1/)	$2.02	$1.91	$1.92	$1.86	2/-2.8
Claims processed 3/ (in millions)..	33.8	33.6	43.7	48.7	54.0	12.4
Per employee (per year)...........	2,940	3,007	3,400	3,710	4,072	8.5
Average annual manpower (number of persons)........................	11,494	12,836	12,828	13,124	13,259	3.6

1/ Data not available.
2/ Computed 1969-72.
3/ Includes railroad retirement benefits administered by Travelers Insurance Company.

SOURCE: Unpublished SSA data.

TABLE 35.--Medicare administrative costs (obligations), fiscal year 1971

Agency or program	HI	SMI
Total..........................	$148,731,136	$260,548,845
Department of the Treasury...........	6,379,468	43,766
Bureau of Accounts................	169,082	16,235
Internal Revenue Service...........	6,210,340	0
Office of the Treasurer of the U.S.	46	9
Secret Service....................	0	27,522
Civil Service Commission.............	0	126,281
Department of Health, Education, and Welfare:		
Office of the Secretary............	1,507,000	1,487,000
Departmental management..........	740,000	1,402,000
Office of Civil Rights...........	767,000	85,000
Community Health Services..........	3,755,000	764,000
Social Security Administration.....	135,567,668	256,291,798
Bureau of District Office Operations........................	11,265,482	20,406,528
Bureau of Retirement and Survivors Insurance..................	2,095,368	3,141,596
Bureau of Health Insurance.......	13,664,327	14,742,804
Health Insurance State agencies	10,138,000	2,472,000
Intermediaries and carriers....	73,877,000	189,723,000
Bureau of Data Processing........	19,544,480	18,168,783
Office of Research and Statistics	401,154	3,635,087
Bureau of Hearings and Appeals...	1,436,806	---
Incentive reimbursement experimentation 1/.........................	364,000	0
All other.......................	2,781,051	4,002,000
Construction.....................	1,522,000	1,836,000

1/ Authorized under the 1972 admendments and administered by the Bureau of Health Insurance and the Office of Research and Statistics.

SOURCE: Unpublished SSA data.

TABLE 36.--Medicare trust fund expenditures: Amount per enrollee for benefit payments and administrative costs, fiscal years 1967-73

Type of expenditures	1967	1968	1969	1970	1971	1972	1973
				HI and SMI			
Expenditures per enrollee..........	$174.97	$275.77	$333.21	$351.74	$380.34	$415.77	$441.37
Benefit payments..................	165.89	262.93	317.89	334.49	360.69	395.46	418.50
Administrative costs..............	9.08	12.84	15.32	17.25	19.65	20.31	22.87
Intermediaries and carriers.......	4.89	7.87	9.76	11.53	12.71	13.46	14.34
Government........................	4.19	4.97	5.56	5.72	6.94	6.84	8.53
				HI			
Expenditures per enrollee..........	$135.32	$196.84	$841.39	$244.89	$271.57	$299.42	$320.13
Benefit payments..................	131.30	191.93	235.64	238.13	264.37	291.32	311.06
Administrative costs..............	3.93	4.91	5.75	6.76	7.20	8.10	9.07
Intermediaries and carriers.......	1.35	2.11	2.85	3.03	3.59	4.29	4.06
Government........................	2.58	2.80	2.90	3.13	3.61	3.81	5.02
				SMI			
Expenditures per enrollee..........	$42.91	$85.73	$97.33	$113.43	$116.24	$124.79	$130.99
Benefit payments..................	37.35	77.13	87.25	102.38	103.11	111.91	116.38
Administrative costs..............	5.56	8.60	10.08	11.05	13.13	12.88	14.61
Intermediaries and carriers.......	3.81	6.23	7.27	8.30	9.61	9.66	10.86
Government........................	1.75	2.37	2.81	2.75	3.52	3.22	3.75

SOURCE: Unpublished SSA data.

TABLE 37.--Medicare trust fund expenditures: Percentage change in amount per enrollee for benefits payments and administrative costs, fiscal years 1967-73

Type of expenditure	1968	1969	1970	1971	1972	1973	1967-73	1968-73
HI and SMI								
Expenditures per enrollee..	57.6	15.8	5.6	8.1	9.3	6.2	152.3	60.1
Benefits payments.........	58.5	20.9	5.2	7.8	9.6	5.8	152.4	59.3
Administrative costs......	41.4	19.3	12.6	13.9	3.4	12.6	151.8	78.1
Intermediaries and carriers...............	60.9	24.0	18.1	10.2	5.9	6.5	193.3	82.2
Government................	18.6	11.9	2.9	21.3	-1.4	24.7	103.6	71.6
HI								
Expenditures per enrollee..	45.5	22.6	1.4	10.9	10.3	6.9	136.6	62.6
Benefit payments.........	46.1	22.8	1.1	11.0	10.2	6.8	137.4	62.0
Administrative costs......	24.9	17.1	17.6	6.5	12.5	12.0	130.8	84.7
Intermediaries and carriers...............	56.3	35.1	27.4	-1.1	19.5	-5.4	200.7	92.4
Government................	7.7	3.9	7.9	15.3	5.5	31.8	95.3	79.9
SMI								
Expenditures per enrollee..	99.8	13.5	16.5	2.5	7.4	5.0	205.3	52.8
Benefit payments.........	106.5	13.1	17.3	.7	8.5	4.0	213.5	50.6
Administrative costs......	54.7	17.2	9.6	18.8	-1.9	13.4	163.1	70.0
Intermediaries and carriers...............	63.5	16.7	14.2	15.8	.5	12.4	185.4	74.3
Government................	35.4	19.1	-2.5	28.5	-8.8	16.8	115.5	58.9

SOURCE: Unpublished SSA data.

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TABLE 38.—Blue Cross plans: Number of enrollees, benefit payments, and administrative costs under regular business and under Medicare, calendar year 1971

State and plan	Enrollees under— Regular business	Medicare Number	Medicare Percent of regular business	Benefits paid under— Regular business	Medicare Amount	Medicare Percent of regular business	Administrative costs under— Regular business	Medicare Amount	Medicare Percent of regular business
Total...................	74,932,397	20,356,890	27.2	$6,053,538,788	$5,407,846,500	89.3	$338,909,565	$62,308,049	18.4
Alabama, Birmingham............	1,162,628	338,827	29.1	1/120,569,949	73,869,500	61.3	6,051,164	516,810	8.5
Alaska2/......................	----	----	----	----	----	----	----	----	----
Arizona, Phoenix...............	299,012	171,284	57.3	25,048,138	54,908,500	219.2	1,756,015	551,842	31.4
Arkansas, Little Rock..........	494,885	245,934	49.7	1/35,831,625	48,275,000	134.7	2,826,843	410,774	14.5
California.....................	3,184,459	1,841,313	57.8	374,063,046	565,129,500	151.1	29,972,897	7,118,354	23.7
Los Angeles..................	1,676,184	----	----	1/205,773,940	347,463,500	168.9	15,377,238	4,102,018	26.7
Oakland......................	1,508,275	----	----	1/168,289,106	217,666,000	129.3	14,595,659	3,016,336	20.7
Colorado, Denver...............	890,179	194,668	21.9	68,986,293	65,079,500	94.3	4,318,021	869,504	20.0
Connecticut, New Haven.........	1,516,603	296,130	19.5	127,430,555	66,072,500	51.8	5,650,827	441,823	7.8
Delaware, Wilmington...........	402,349	46,664	11.6	30,674,677	12,711,000	41.4	1,091,816	200,368	18.4
District of Columbia3/.........	1,374,225	151,142	4.8	93,744,917	39,877,500	42.5	5,179,981	418,790	8.1
Florida, Jacksonville..........	1,491,698	999,189	67.0	88,449,190	248,275,000	280.7	5,445,380	2,497,336	45.9
Georgia........................	946,578	379,811	40.1	56,420,592	71,371,500	126.5	3,256,912	1,140,542	35.0
Atlanta......................	468,456	----	----	32,721,115	29,085,500	88.9	1,683,306	522,958	31.1
Columbus.....................	478,123	----	----	23,699,477	42,286,000	178.4	1,573,606	617,584	39.2
Hawaii4/.......................	----	----	----	----	----	----	----	----	----
Idaho, Boise...................	143,630	72,196	50.3	1/9,932,771	14,855,500	149.6	1,104,475	278,852	25.2
Illinois.......................	3,089,616	1,110,171	35.9	306,700,264	349,486,500	114.0	17,536,605	3,505,936	20.0
Chicago......................	2,970,264	----	----	299,234,890	343,382,500	114.8	16,601,102	3,446,540	20.8
Rockford.....................	119,352	----	----	1/7,465,374	6,104,000	81.8	935,503	59,395	6.3
Indiana, Indianapolis..........	1,888,277	505,070	26.7	148,333,927	122,943,500	82.9	12,480,910	1,832,332	14.7
Iowa...........................	1,164,085	357,525	30.7	66,166,081	109,873,000	166.1	4,278,403	1,146,207	26.8
Des Moines...................	915,773	----	----	53,064,663	70,277,500	132.4	3,368,125	796,376	23.6
Sioux City...................	248,312	----	----	13,101,418	39,595,500	302.2	910,278	349,830	38.4
Kansas, Topeka.................	756,041	272,968	36.1	50,973,511	56,665,500	111.2	3,692,789	713,524	19.3
Kentucky, Louisville...........	1,206,118	347,044	28.8	66,662,441	72,329,000	108.5	3,329,759	1,034,523	31.1
Louisiana......................	866,310	314,475	36.3	63,085,408	75,346,500	119.4	5,599,477	1,045,894	18.7
Baton Rouge..................	550,087	----	----	1/34,546,483	47,643,000	137.9	3,394,213	633,020	18.6
New Orleans..................	316,223	----	----	1/28,538,925	27,703,500	97.1	2,205,264	412,873	18.7
Maine, Portland................	431,926	123,148	28.5	27,027,376	28,368,000	105.0	1,585,783	409,754	25.8
Maryland, Baltimore............	1,399,888	303,293	21.7	124,971,003	75,041,000	60.0	5,127,392	855,050	17.3
Massachusetts, Boston..........	3,139,769	640,048	20.4	305,842,000	208,481,000	68.2	11,920,000	2,755,761	23.1
Michigan, Detroit..............	5,071,300	784,439	15.5	469,146,000	255,309,500	54.4	20,539,000	3,030,734	14.8
Minnesota, St. Paul............	892,557	421,246	47.2	67,354,396	126,729,000	188.2	5,120,086	1,579,236	30.8
Mississippi, Jackson...........	506,580	231,694	45.7	1/38,668,476	48,756,500	126.1	3,396,989	578,275	17.0
Missouri.......................	1,797,954	569,461	31.7	146,787,263	169,070,000	115.2	7,334,508	2,128,978	29.0
Kansas City..................	539,173	----	----	44,439,818	56,847,000	127.9	2,631,212	463,057	17.6
St. Louis....................	1,258,781	----	----	102,347,445	112,223,000	109.6	4,703,296	1,665,922	35.4
Montana, Great Falls...........	81,749	71,350	87.3	1/7,195,823	17,812,500	247.5	777,142	220,758	28.7
Nebraska, Omaha................	389,583	186,802	47.9	26,618,797	36,949,500	138.7	2,351,224	386,494	12.2
Nevada4/.......................	----	----	----	----	----	----	----	----	----
New Hampshire, Concord.........	565,634	133,303	15.0	33,944,451	33,477,000	98.6	1,967,935	604,361	30.7
New Jersey, Newark.............	3,695,572	711,571	19.3	274,760,000	129,917,500	47.3	11,727,257	1,240,200	10.6
New Mexico, Albuquerque........	133,529	77,565	58.1	7,843,808	16,172,500	206.2	503,850	241,345	47.9
New York.......................	11,811,175	1,981,767	16.8	799,998,442	612,106,000	80.3	46,944,371	6,394,610	13.6
Albany.......................	544,828	----	----	42,948,633	40,484,000	94.3	2,390,121	392,887	16.4
Buffalo......................	978,536	----	----	65,277,806	48,781,500	74.7	3,819,522	626,660	16.4
Jamestown....................	61,720	----	----	2,632,809	5,163,000	196.1	127,915	74,325	58.1
New York City................	8,526,423	----	----	581,126,826	456,102,000	78.5	35,707,304	4,414,959	12.4
Rochester....................	834,595	----	----	56,080,114	28,934,500	51.6	2,427,184	357,670	14.7
Syracuse.....................	525,869	----	----	33,321,021	36,406,500	109.3	1,479,418	282,400	19.1
Utica........................	293,922	----	----	15,931,957	22,650,500	142.2	770,993	203,512	26.4
Watertown....................	45,282	----	----	2,679,252	3,579,500	133.6	221,911	42,199	19.0
North Carolina, Chapel Hill-Durham..	1,552,106	435,456	28.1	1/125,513,000	93,462,500	74.5	8,398,000	1,102,854	13.1
North Dakota, Fargo............	290,930	69,680	24.0	21,465,640	21,005,000	97.9	1,311,051	218,416	16.7
Ohio...........................	5,420,810	1,014,633	18.7	454,581,245	271,628,000	59.8	17,099,555	2,933,280	17.2
Canton.......................	236,239	----	----	17,698,567	11,195,000	63.3	587,270	138,180	23.5
Cincinnati...................	1,514,914	----	----	125,012,767	67,919,500	54.3	5,086,946	827,222	16.3
Cleveland....................	1,785,875	----	----	165,857,450	84,374,000	50.9	6,592,331	959,321	14.6
Columbus.....................	735,439	----	----	46,999,923	45,069,000	95.9	1,646,776	477,713	29.0
Lima.........................	145,306	----	----	8,268,247	8,320,500	100.6	273,222	70,849	25.9
Toledo.......................	619,275	----	----	53,880,718	29,559,500	54.9	1,910,602	249,726	13.1
Youngstown...................	383,762	----	----	36,863,573	25,190,500	68.3	1,002,408	210,268	21.0
Oklahoma, Tulsa................	619,647	305,176	49.2	44,176,293	72,114,500	163.2	2,412,014	924,704	38.3
Oregon, Portland...............	465,522	235,568	50.6	1/44,614,885	58,521,000	131.2	3,708,311	561,436	15.1
Pennsylvania...................	6,495,527	1,298,811	20.0	506,615,628	265,776,000	52.5	21,806,673	3,201,106	14.7
Allentown....................	389,907	----	----	23,733,790	11,723,000	49.4	1,177,869	135,930	11.5
Harrisburg...................	900,394	----	----	59,179,671	40,557,000	68.5	2,655,910	483,453	18.2
Philadelphia.................	2,391,466	----	----	203,623,706	56,280,500	27.6	6,985,061	623,696	8.9
Pittsburgh...................	2,293,211	----	----	185,538,738	127,880,500	68.9	9,754,081	1,627,562	16.7
Wilkes-Barre.................	520,549	----	----	34,539,723	29,735,000	86.1	1,233,752	330,466	26.8
Rhode Island, Providence.......	714,630	106,679	14.9	53,726,867	34,464,500	64.1	2,084,063	443,403	21.3
South Carolina, Columbia.......	488,885	202,550	41.4	30,875,256	36,454,500	118.1	2,042,685	758,294	37.1
South Dakota5/.................	----	----	----	----	----	----	----	----	----
Tennessee......................	1,351,871	399,601	29.6	109,064,847	94,813,500	86.9	8,094,697	1,125,576	13.9
Chattanooga..................	1,161,860	----	----	1/89,679,319	72,060,000	80.4	6,295,037	816,826	13.0
Memphis......................	190,011	----	----	1/19,385,528	22,753,500	117.4	1,799,660	308,750	17.2
Texas, Dallas..................	2,802,691	1,026,909	36.6	1/292,632,278	275,047,500	94.0	18,304,225	2,615,731	14.3
Utah, Salt Lake City...........	319,423	81,032	25.4	19,550,507	16,414,500	84.0	1,249,898	304,055	24.3
Vermont6/......................	----	----	----	----	----	----	----	----	----
Virginia.......................	1,174,333	378,494	32.2	81,559,536	72,820,500	89.3	4,390,170	990,940	22.6
Richmond.....................	869,226	----	----	61,007,145	58,109,000	95.2	3,698,193	831,459	22.5
Roanoke......................	305,107	----	----	20,552,391	14,711,500	71.6	691,977	159,482	23.0
Washington, Seattle...........	444,872	333,408	75.0	1/40,023,340	64,691,500	161.6	4,398,203	718,759	16.3
West Virginia..................	387,012	202,777	52.4	30,884,741	45,045,500	145.8	1,207,641	660,696	54.7
Bluefield....................	30,014	----	----	194,051	----	----	104,024	----	----
Charleston...................	204,690	----	----	15,493,851	23,517,500	151.8	675,922	287,038	42.5
Parkersburg..................	40,352	----	----	3,466,814	5,342,500	154.1	107,468	73,978	68.8
Wheeling.....................	111,956	----	----	9,975,025	16,185,500	162.3	320,227	299,680	93.6
Wisconsin, Milwaukee...........	1,509,551	487,725	32.3	130,532,111	132,298,500	101.4	9,197,055	1,340,414	14.6
Wyoming, Cheyenne..............	100,688	31,876	31.7	4,461,429	6,871,000	154.0	307,511	104,854	34.1

1/ Includes surgical-medical plan.
2/ Served by Seattle, Wash., plan.
3/ Includes enrollees in Maryland and Virginia counties considered part of Washington, D. C., metropolitan area.
4/ No Blue Cross plan.

5/ Served by Iowa plan.
6/ Served by New Hampshire plan.

Source: Unpublished Social Security Administration data and Blue Cross-Blue Shield Fact Book, 1972.

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TABLE 39.--Blue Shield plans: Number of enrollees, benefit payments, and administrative costs under regular business and under Medicare, calendar year 1971

(In thousands, except for percentages)

State and plan	Enrollees under--			Benefit payments under--			Administrative costs under--		
	Regular business	Medicare		Regular business	Medicare		Regular business	Medicare	
		Number	Percent of regular business		Amount	Percent of regular business		Amount	Percent of regular business
Total..............	48,745	10,974	22.5	$1,860,747	$1,127,292	60.6	$233,910	$102,125	43.6
Alabama, Birmingham......	1,136	315	27.7	1/120,570	24,241	20.1	6,051	1,300	29.7
Arkansas, Little Rock......	484	225	46.5	1/35,332	15,355	42.9	2,327	1,477	52.3
California, San Francisco......	1,139	724	63.6	1/714,290	134,738	117.9	21,682	15,752	72.6
Colorado, Denver......	347	177	20.9	27,535	19,193	60.6	3,957	2,583	65.2
Delaware, Wilmington......	375	42	11.2	11,744	3,062	26.1	1,213	375	30.3
District of Columbia, 2/......	1,312	146	4.6	93,574	19,206	21.3	9,707	1,379	19.4
Florida, Jacksonville......	1,444	936	64.8	34,031	125,360	363.4	5,583	7,423	132.6
Illinois......	2,649	469	17.7	64,043	49,584	77.4	9,415	5,071	53.9
Indiana, Indianapolis......	1,846	459	24.9	67,011	31,762	47.4	4,273	2,723	43.4
Iowa, Des Moines......	1,030	333	32.3	47,036	19,586	41.6	5,330	2,376	44.6
Kansas, Topeka......	756	244	32.3	30,970	16,556	50.2	3,677	1,329	49.7
Maryland, Baltimore......	1,233	272	21.2	41,337	14,370	35.9	4,594	1,654	35.7
Massachusetts, Boston......	3,035	610	20.1	103,658	62,570	60.4	13,036	5,646	42.5
Michigan, Detroit......	4,838	737	15.1	230,409	65,126	23.2	26,668	7,339	30.9
Minnesota, Minneapolis......	609	214	35.1	34,774	10,440	30.0	6,773	1,267	18.7
Missouri......	1,491	146	9.8	42,075	14,517	29.0	7,274	1,430	19.7
Montana, Helena......	109	63	57.6	1/8,080	4,460	49.1	1,008	294	20.2
New Hampshire, Concord......	551	125	22.7	16,907	9,154	54.1	2,591	905	32.4
New York......	9,314	1,293	13.9	218,869	173,429	31.5	32,322	16,461	60.9
North Dakota, Fargo......	237	64	22.4	10,093	4,903	44.3	1,663	541	32.6
Pennsylvania, Camp Hill......	5,931	1,176	19.8	157,122	102,202	85.0	19,533	7,026	36.0
Rhode Island, Providence......	701	102	14.6	29,179	19,269	50.9	2,074	779	37.5
South Carolina, Columbia......	473	136	39.3	9,335	19,045	107.6	2,060	1,043	50.4
South Dakota, Sioux Falls......	95	78	82.1	1,682	4,291	255.1	409	464	113.6
Texas, Dallas......	2,806	955	34.1	36,290	103,036	236.4	5,894	6,934	117.7
Utah, Salt Lake City......	317	70	22.2	14,598	5,469	37.7	1,640	431	26.3
Virginia......	1,139	28	2.5	36,704	---	---	3,918	---	---
Washington......	696	309	44.4	1/73,302	28,054	33.0	7,320	3,290	44.9
Wisconsin......	1,730	452	25.7	1/91,677	34,290	37.4	9,751	2,627	26.9
Puerto Rico......	222	98	44.4	17,670	7,616	43.1	1,723	661	38.4

1/ Includes hospital plan.
2/ Includes enrollees Maryland and Virginia counties counted as part of Washington, D.C., metropolitan area.

SOURCE: Unpublished SSA data and Blue Cross-Blue Shield Fact Book, 1972.

TABLE 40.--Commercial insurance companies: Claims payments, benefit payments, and administrative costs under regular business and under Medicare, calendar year 1971

(In thousands, except for percentages)

Insurance company	Claims payment under regular business	Benefit payments under Medicare			
		Total		Hospital insurance	Supplementary medical insurance
		Amount	Percent of regular business		
Total.................................	$5,311,854	$1,045,272	19.7	$411,019	$634,552
Aetna.................................	977,336	211,547	21.6	151,758	59,789
Connecticut General...................	515,444	24,940	4.8	---	24,940
Continental Casualty..................	43,868	29,220	66.6	---	29,220
Equitable.............................	560,471	37,612	6.7	---	37,612
General American......................	82,335	28,428	34.5	---	28,428
Metropolitan..........................	768,584	43,114	5.6	---	43,114
Mutual of Omaha.......................	354,288	65,418	18.5	52,511	12,907
Nationwide............................	31,076	87,525	281.6	21,940	65,584
Occidental............................	239,401	112,858	47.1	---	112,858
Pan American..........................	21,908	20,250	92.4	---	20,250
Prudential............................	720,032	191,434	26.4	63,908	127,526
Travelers.............................	889,346	186,460	21.0	120,902	65,558
Union Mutual..........................	101,745	,766	6.6	---	6,766

Insurance company	Administrative costs under regular business	Administrative costs under Medicare			
		Total		Hospital Insurance	Supplementary medical insurance
		Amount	Percent of regular business		
Total.................................	$868,791	$61,289	7.1	$8,482	$52,807
Aetna.................................	115,709	8,003	6.9	2,636	5,367
Connecticut General...................	66,983	1,628	2.4	---	1,628
Continental Casualty..................	15,783	3,130	19.8	---	3,130
Equitable.............................	77,528	3,380	4.4	---	3,380
General American......................	11,922	2,362	19.8	---	2,362
Metropolitan..........................	138,449	5,406	3.9	---	5,406
Mutual of Omaha.......................	129,945	2,946	2.3	1,784	1,162
Nationwide............................	8,234	6,222	75.6	342	5,880
Occidental............................	27,453	8,453	30.8	---	8,453
Pan American..........................	5,602	1,773	31.6	---	1,773
Prudential............................	141,117	10,600	7.5	956	9,644
Travelers.............................	109,879	6,612	6.0	2,764	3,848
Union Mutual..........................	20,187	774	3.8	---	774

Source: Unpublished Social Security Administration data and 1972 Argus Chart of Health Insurance.

TABLE 41.—Medicare, Part A, regression results [2]

Independent variables	Dependent variables							
	Administrative costs/(benefit payments and administrative costs)	Administrative costs/number of claims	Administrative costs/(benefit payments and administrative costs)	Administrative costs/number of claims	Administrative costs/(benefit payments and administrative costs)	Administrative costs/number of claims	Provider audit costs/benefits paid	Administrative costs less provider audit costs/benefits paid
Total number of claims handled....	.212-05 (1.829)	.764-06 (2.217)	.131-06 (2.501)	.399-06 (2.545)			.833-06 (1.465)	.135-05 (1.386)
The square of total claims handled...	-.180-09 (.784)	-.808-10 (1.187)					-.100-09 (.892)	-.831-10 (.433)
Medicare claims as a percentage of total claims......	.214-04 (.595)	.136-05 (.127)	.168-04 (.477)	-.683-06 (.065)	-.170-04 (.499)	-.110-04 (1.076)	.267-04 (1.516)	-.399-05 (.133)
F.E.P. claims as a percentage of total claims......	.300-03 (3.202)	.796-04 (2.864)	.304-03 (3.273)	.183-04 (2.940)	.293-03 (3.017)	.783-04 (2.690)	.138-03 (3.007)	.173-03 (2.204)
Average claims size.............	-.354-01 (4.840)	.412-02 (1.895)	-.347-01 (4.798)	.442-02 (2.042)	-.264-01 (3.932)	.695-02 (3.443)	-.311-02 (.868)	-.335-01 (5.460)
Average Medicare employee salary...	.172-05 (1.153)	.174-06 (.393)	.196-05 (1.351)	.284-06 (.652)	.236-06 (1.576)	.410-06 (.907)	.359-06 (.490)	.145-05 (1.162)
Medicare claims number of providers..........	-.702-06 (1.511)	-.242-06 (1.751)	-.703-06 (1.517)	-.242-06 (1.746)	-.833-06 (1.731)	-.282-06 (1.953)	-.732-06 (3.206)	.501-08 (.013)
Extended care facility claims as a percentage of total Medicare claims.............	.372-02 (.139)	.176-02 (.222)	.473-02 (.177)	.222-02 (.278)	.849-02 (.305)	.336-02 (.404)	.182-01 (1.388)	-.141-01 (.627)
Constant.........	.215-01 (5.333)	.287-02 (2.395)	.213-01 (5.309)	.277-02 (2.307)	.203-01 (4.873)	.248-02 (1.980)	.338-02 (1.706)	.185-01 (5.472)
Corrected R^2......	.33	.32	.34	.32	.28	.25	.29	.30
Sy................	.003	.001	.003	.001	.004	.001	.002	.003

[1] Based on 64 observations.
[2] 1t1 value in parentheses.

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TABLE 42.--Medicare, Part B, regression results 1/ 2/

Independent variables	Administrative costs/benefit payments and administrative costs			Administrative costs/number of enrollees			Administrative costs/number of bills		
Total number of bills handled.....	-.143-07 (1.647)	-.217-08 (.640)		-.215-08 (2.216)	.191-08 (4.281)		.561-09 (1.576)	-.111-09 (.804)	
The square of total number of bills handled..........	.303-14 (1.514)			.102-14 (4.531)			.113-15 (1.369)		
Percent of bills investigated......	.994-03 (1.266)	.856-03 (1.083)	.903-03 (1.154)	.141-03 (1.603)	.949-04 (.911)	.541-04 (.447)	.230-04 (.712)	.178-04 (.552)	.202-04 (.630)
Dummy, 1=commercial carrier, otherwise	(.028)	-.303-02 (.445)	-.376-02 (.564)	(1.576)	-.219-02 (2.439)	-.155-02 (1.497)	-.107-03 (.373)	-.213-03 (.762)	-.250-03 (.913)
Multiple payment centers..........	-.447-02 (.602)	-.787-02 (1.097)	-.857-02 (1.217)	-.825-03 (.991)	-.197-02 (2.083)	-.135-02σ (1.238)	-.126-03 (.414)	-.253-03 (.861)	-.289-03 (1.000)
Average bill size..	-.119+01 (3.399)	-.136+01 (4.000)	-.141+01 (.4.388)	-.339-02 (.086)	-.579-01 (1.296)	-.847-02 (.168)	.388-01 (2.686)	.327-01 (2.360)	.299-01 (2.236)
Number of bills/and number of providers	-.693-05σ (.465)	-.863-05 (.574)	-.120-04 (.859)	-.365-06 (.218)	-.938-06 (.473)	.205-05 (.945)	-.444-06 (.727)	-.508-06 (.825)	-.682-06 (1.188)
Percent bills assigned..........	-.413-04 (.210)	-.935-04 (.477)	-.121-03 (.637)	.148-04 (.674)	-.269-05 (.104)	.214-04 (.730)	-.172-05 (.214)	-.366-05 (.457)	-.507-05 (.651)
Dummy, 1 if model system, otherwise..	-.424-03 (.047)	.617-03 (.068)	.375-02 (.493)	.216-02 (2.137)	.251-02 (2.093)	-255-03 (.216)	.139-03 (.377)	.178-03 (.478)	.339-03 (1.086)
Dummy, 1 if own system, otherwise..	-.240-02 (.295)	-.102-02 (.125)	.176-02 (.255)	.978-03 (1.072)	.144-02 (1.337)	-.101-02 (.946)	-.921-04 (.276)	-.408-04 (.122)	.102-03 (.361)
Dummy, 1 of A.S.D.C system, otherwise..	-.140-01 (1.081)	-.135-01 (1.024)	-.966-02 (.829)	.842-03 (.578)	.103-02 (.594)	-.232-02 (1.289)	-.595-03 (1.117)	-.575-03 (1.068)	-.379-03 (.793)
Average Medicare employee salary....	.644-05 (1.957)	.733-05 (2.149)	.670-05 (2.064)	.110-05 (2.899)	.134-05 (2.971)	.189-05 (3.775)	.277-06 (1.982)	.302-06 (2.164)	.269-06 (2.025)
Constant.........	.943-01 (3.191)	.981-01 (3.285)	.103+00 (3.566)	-.106-02 (.319)	.203-03 (.052)	-.386-02 (.867)	.619-03 (.510)	.759-03 (.621)	.996-03 (.843)
Corrected R^2.....	.23	.21	.21	.57	.40	.18	.31	.29	.30
Sy..............	.017	.017	.017	.002	.002	.003	.001	.001	.001

1/ Based on 59 observations.
2/ ltl value in parentheses.

APPENDIX A: THE CONCEPT OF COST

The total costs of a firm at any one time are comprised of total variable costs plus total fixed costs. These total costs are determined by the production function, the output produced by the firm, and the prices of the inputs employed in producing the output. Economists distinguish between fixed costs and variable costs because fixed costs do not change with output while variable costs do. An example of a fixed cost is the costs of the plant and land that a firm uses to produce its output. Once the firm has acquired these inputs, the full costs of using them must be borne regardless of the level of production. Thus, irrespective of the firm's output level, the costs of the plant and land are constant. Variable costs are all those that vary with the level of output. An example is the costs of the ingredients used in producing, say, soap. As more soap is produced, more labor and fats and other chemicals are needed. Thus, variable costs vary with output. Since total cost is the sum of the variable and fixed costs, total cost is a function of output plus constant fixed costs.

The distinction between the long run and the short run revolves around the variability of inputs in the productive process. In the long run, *all* inputs are variable. In fact, this is the definition of the long run. In our example above, if the period of time in question were sufficiently long, the size of the firm's plant and the amount of land under its control could be augmented or reduced. The short run is defined as a period of time during which at least one input is fixed.

For analysis, average and marginal cost curves usually are used rather than the total cost curve. The average cost curve shows the total cost divided by total output at all levels of output. Since total cost equals total fixed cost plus total variable cost, average total cost at any output level is equal to average fixed cost plus average variable cost at that output level. The shapes of these curves depend on the specification of the production function that is used by the firm. For one class of production function, figure 1 depicts the relations between the average cost curves and their general shape in the short run. Since total fixed costs are constant in the short run, the average fixed costs are described by a rectangular hyperbola, which means that the product of the coordinates of all points on the curve is constant. The *AFC* curve declines continuously as output expands because the constant total fixed costs are divided by larger and larger outputs.

The average variable cost *(AVC)* curve is also depicted in figure 1. For the production function that underlies these curves, the *AVC* curve declines initially, reaches a minimum, and then begins to rise again as output expands. The intuition behind this phenomenon is straightforward. Given a fixed plant size, as successive units of labor are added to the work force, one would expect average labor costs per unit of output to
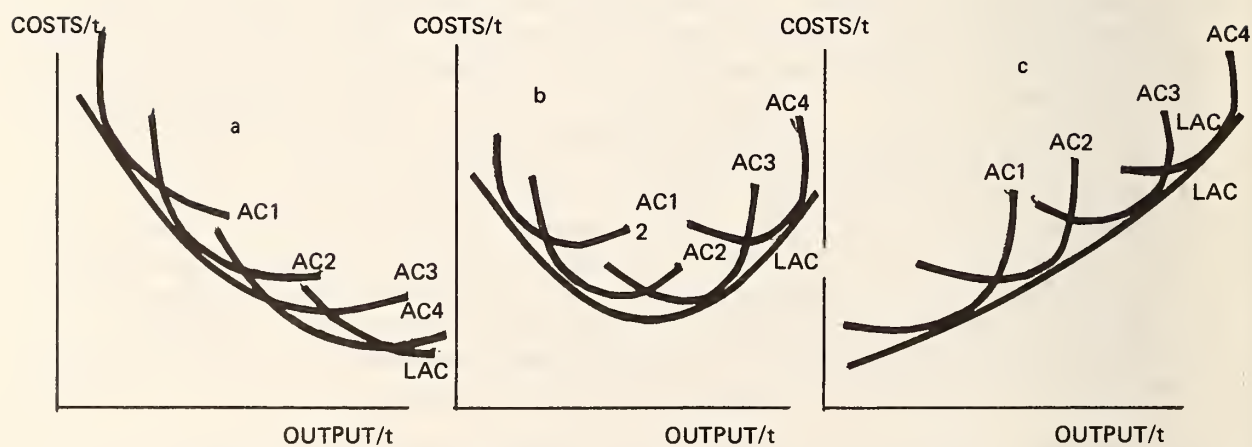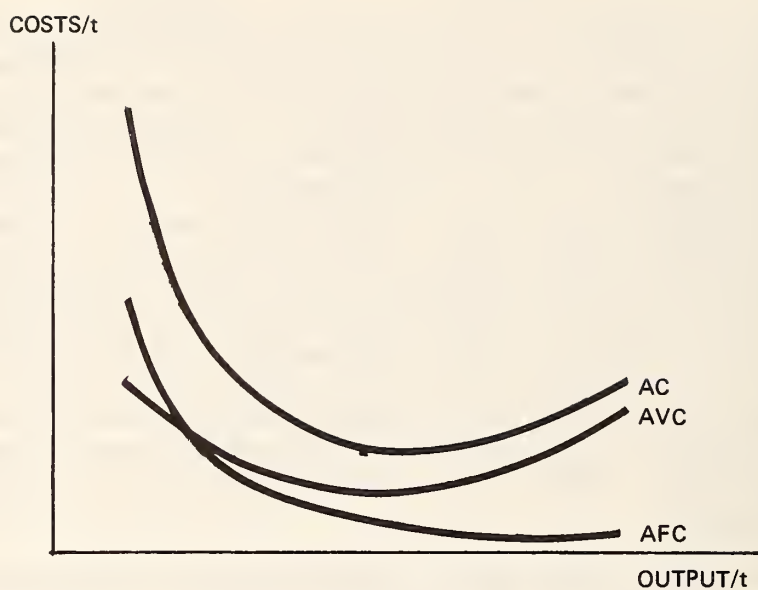
Figure 1 - Cost functions for hypothetical insurer

fall. Primarily, this results from the specialization of labor, that is, the tasks performed by each worker are made easier. But, as jobs become so easy that the worker is bored or as so many laborers are present that congestion becomes a problem, the average labor cost per unit of output rises.

Because average total cost is the sum of average fixed and average variable costs, the *AC* curve is given by the vertical summation of the *AFC* and *AVC* curves. This is also depicted in figure 1.

The shape of the long-run average cost *(LAC)* curve is also determined by the specification of the production function. The *LAC* curve is the envelope of the SAC curves as the scale of the fixed plant is adjusted. Figure 1 depicts the behavior of the *LAC* curve under three different types of conditions. In panel (a) economies of scale are present; as the firm expands output it becomes more efficient and per unit costs of output fall. In panel (b) the firm's *LAC* curve is U-shaped. This means that economies of scale are present initially, but that diseconomies of scale set in and the *LAC* curve begins to rise as output continues to expand. In panel (c) the firm faces diseconomies of scale; that is, the firm becomes less efficient as output expands and *LAC* increase everywhere.

In the usual treatment of costs and production, the discussion centers on a tangible output. Conceptually, the analysis immediately generalizes to the output of the service sector, but several difficult problems are overlooked. One consequence of the economist's neglect of the service sector, including the health insurance industry, is that output measures for the service industries are sadly lacking. In most empirical studies of the insurance industry, the unit of output is defined as premium volume. More specifically, it is taken to be premiums written. At least one empirical study has found the *LAC* curve for the *life* insurance industry to be similar to that of panel (a) in figure 1. 1/

The approaches taken in these studies, however, may not be the most useful means of understanding the nature and behavior of costs in the health insurance industry. Health insurance provides protection against a random event--the costs associated with ill health. In providing protection against this random event, the firm must perform many functions. It must sell insurance policies, process applications and policies, maintain policies, process claims, review claims, pay claims, and so on. Clearly, the consumer buys more than a simple contingency claim against future loss of wealth. The firm, of course, incurs costs in meeting its various obligations, costs that may be only indirectly related to premium volume. Since the costs of performing these duties may be more a function of the type of application submitted and accepted, the number and kinds of

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1/ David B. Houston and Richard M. Simon, "Economies of Scale in Financial Institutions: A Study in Life Insurance," *Econometrica*, No. 6, November 1970, pp. 856-64.

policies in force, and the number of claims processed, we must be concerned about an appropriate output measure to use for the health insurance industry.

Within the context of the discussion in the text about the distinction between fixed and variable costs, the various costs as functions of output for a health insurance firm could be distributed in the following schematic outline: 2/

Cost	Output

Variable

(1)	Commissions, premium taxes, board and bureau fees	Premium written
(2)	Application-processing	Processed application (weighted) 3/
(3)	Policy-processing	Processed policies (weighted) 3/
(4)	Policy maintenance	Number of policies (weighted) 3/
(5)	Claims-processing	Number of claims processed (weighted) 3/

Fixed

(1)	Salaried employees	
(2)	Buildings and equipment	Fixed costs are incurred to produce all forms of output listed above
(3)	Property taxes and all other fixed financial commitments such as association memberships, advertising	

As Schuchardt points out, many of the variable cost functions are probably "step" functions. The costs associated with items (2), (3), (4), and (5) in the above schematic are likely to increase in discrete incre-

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2/ The basis of this discussion can be found in Robert A. Schuchardt, *Managerial Accounting in the Property and Casualty Business* (Cincinnati: National Underwriter Company, 1969).
   3/ By type of claim.

ments because the inputs required must be hired in discrete units. For
example, as the number of claims to be processed increases, additional
workers will have to be hired. But additions are made in discrete units.
This means that the cost function will jump when the number of claims
passes each threshold that requires an additional claims processor.
Tables 1 and 2 present hypothetical data the indicate how the cost-output
relationship might appear for a typical health-insuring firm. These data
are plotted in figures 2 and 3. The general shapes of the functions are
consistent with the empirical findings for life insurance companies. 4/

The preceding example shows that as a health insurance firm grows larger,
its average administrative expenses will decline. As long as the firm
remains a pure competitor in its purchase of inputs, this relationship
holds irrespective of input prices. Varying input prices will shift the
entire average cost functions up or down, but the general shape will re-
main unchanged.

There are other reasons for believing that the shape of the long-run aver-
age cost function will slope downward as the firm grows larger. In a
small-scale operation, it is uneconomical to use sophisticated electronic
data-processing equipment (EDP). As the number of the firm's claims in-
creases, EDP equipment may be added to replace many of the manual opera-
tions involved and fewer clerks will be needed for application-policy-
processing, policy maintenance, and claims-processing. These functions
are precisely those which contribute to the step-variable costs mentioned.
EDP equipment, on the other hand, demands a large initial outlay and
comes in fairly large units, 5/ making fixed costs a relatively more
important percentage of total costs than manual labor only. It can
easily be shown that as fixed costs become a larger percentage of total
costs, the short-run average cost function of the firm falls more rapidly

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    4/ David B. Houston and Richard M. Simon, *loc. cit.*, pp. 856-64.
    5/ As leasing and time-sharing arrangements become more prevalent,
the "lumpiness" of EDP equipment should diminish.
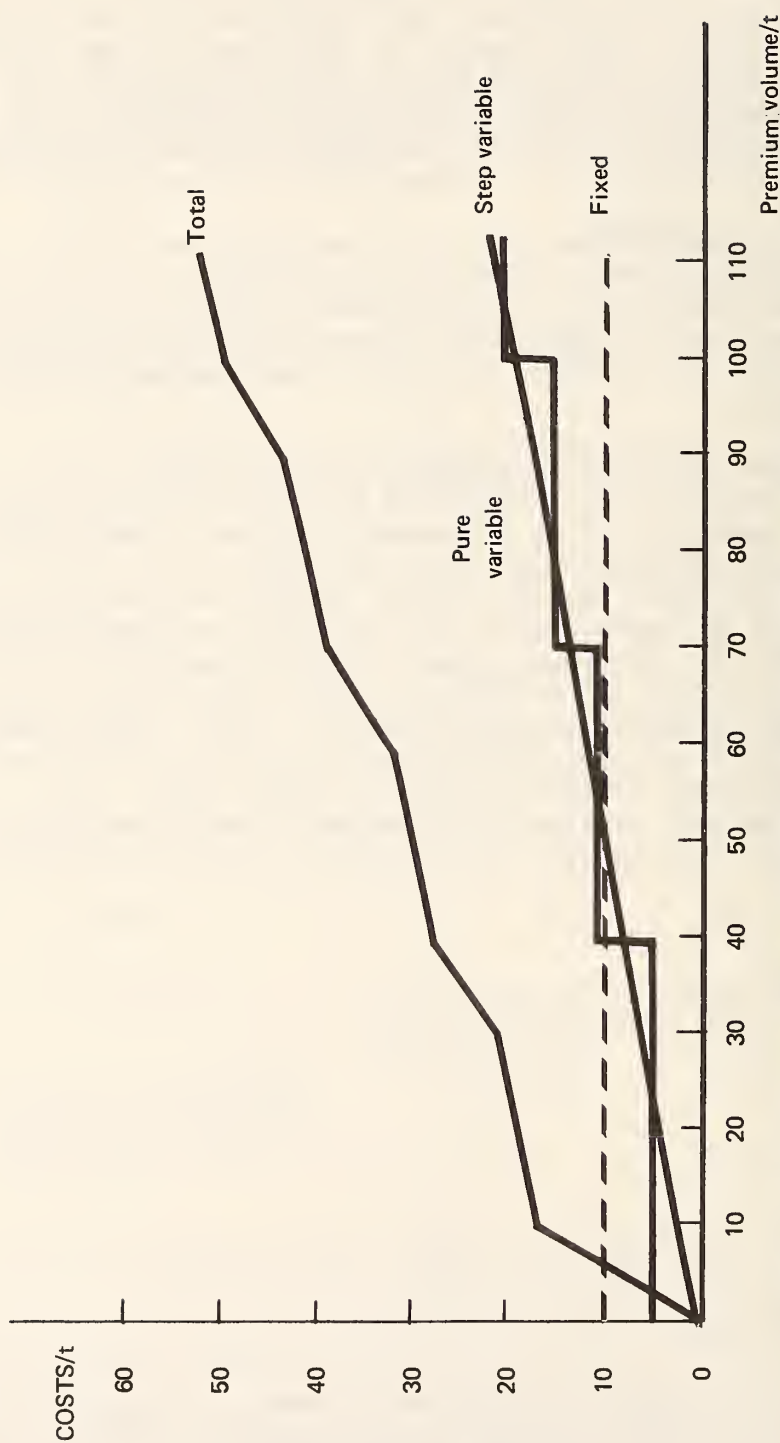
Figure 2 - Costs as a function of premium volume, hypothetical firm — ($000,000)

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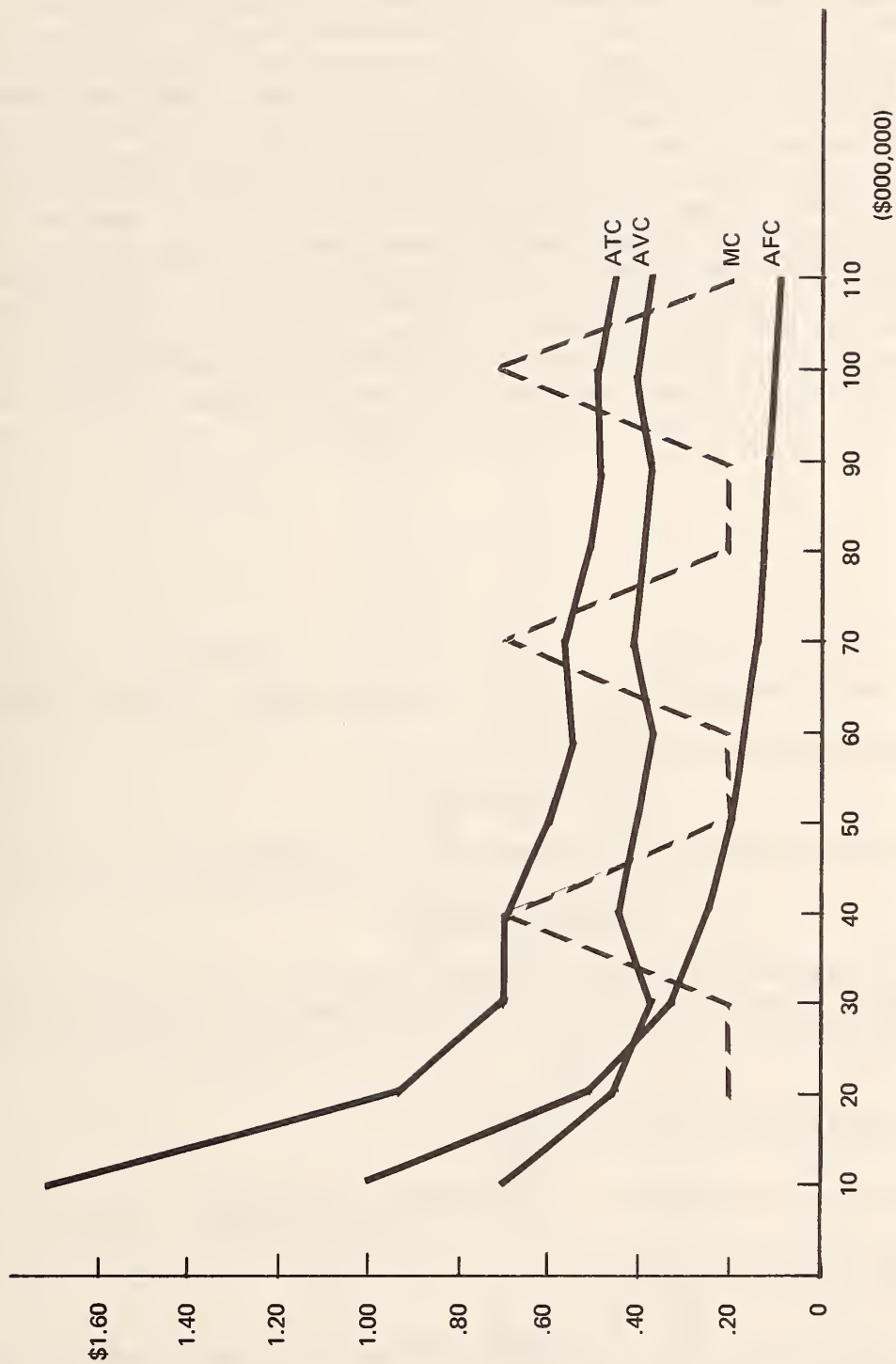
Figure 3 - Average and marginal costs as a function of premium volume, hypothetical firm

($000,000)

when output grows. 6/ Thus the substitution of EDP equipment for manual labor should result in substantial economies to the firm and cause the short-run average cost function to be downward sloping. For the same reasons we would also expect the short-run average cost function of the entire industry to be downward sloping, with larger firms using EDP to have lower costs than smaller firms with no or small EDP capabilities. A priori one would expect larger firms to have lower average administrative costs than smaller ones. In the absence of regulation on rates, this gives the larger firms a competitive advantage and would tend to dictate higher concentration in the industry over time. The logical implication is that the insurance industry is a natural monopoly. The empirical section of this study, however, will show that the short-run (and thereby the long-run) average cost function of the firm and the industry flattens out at some point. Furthermore, the existence of intense product differentiation does not always give the firm with the lowest costs the advantage in the competition to sell health insurance.

6/ The demonstration of this is straightforward. We know that
$$ATC = AVC + AFC.$$
The slope of ATC is given by
$$\frac{d\ ATC}{dQ} = \frac{d\ AVC}{dQ} + \frac{d\ AFC}{dQ}$$
and the rate of change of the slope of ATC is given by

$$\frac{d^2 ATC}{dQ^2} = \frac{d^2 AVC}{dQ^2} + \frac{d^2 AFC}{dQ^2}$$

If the only difference between two cost functions is the fixed cost component, then terms involving AVC will be unchanged. Since the average fixed cost curve is a rectangular hyperbola, it is of the form
$$AFC = \frac{TFC}{Q}$$
Examine the difference between $\dfrac{d^2 AFC}{dQ^2}$

when $TFC=100$ and when $TFC=200$. For $TFC=100$, $\dfrac{d^2 AFC}{dQ^2} = \dfrac{200}{Q^3}$. In con-

trast, for $TFC=200$, $\dfrac{d^2 AFC}{dQ^2} = \dfrac{400}{Q^3}$.

Thus, for any value of Q, the greater the initial fixed costs, the greater the rate of change of the slope of ATC.

TABLE 1.--Hypothetical example of total fixed and variable costs in a health insurance firm

/in millions/

Premium volume	Fixed costs (1)	Step variable costs (2)	Pure variable costs (3)	(2)+(3) (4)	Total costs (1)+(4)
$110.....................	$10	$20	$22	$42	$52
$100.....................	10	20	20	40	50
$90.....................	10	15	18	33	43
$80.....................	10	15	16	31	41
$70.....................	10	15	14	29	39
$60.....................	10	10	12	22	32
$50.....................	10	10	10	20	30
$40.....................	10	10	8	18	28
$30.....................	10	5	6	11	21
$20.....................	10	5	4	9	19
$10.....................	10	5	2	7	17

TABLE 2.--Average fixed costs, average variable costs, average costs, and marginal costs for hypothetical firm, computed from table 1

Volume (in millions)	AFC (1)	AVC (2)	AC (1)+(2)	MC
$110............................	$0.09	$0.38	$0.45	$0.20
$100............................	.10	.40	.50	.70
$90............................	.11	.37	.48	.20
$80............................	.13	.39	.51	.20
$70............................	.14	.41	.56	.70
$60............................	.17	.37	.53	.20
$50............................	.20	.40	.60	.20
$40............................	.25	.45	.70	.70
$30............................	.33	.37	.70	.20
$20............................	.50	.45	.95	.20
$10............................	1.00	.70	1.70	0.00

In chapter 6 we analyzed the administrative costs of the Medicare program. One of the administrative decisions that must be made is how to divide Medicare administrative costs between Part-A hopital insurance (HI) and Part-B supplementary medical insurance (SMI). We noted that generally sound accounting procedures were used and that internal competition would insure a proper allocation of costs. This appendix contains the account- ing rules which were established by the Bureau of Health Insurance, Social Security Administration, for the allocation of costs between HI and SMI. From this material the procedure followed by BHI cost accountants can be traced out.

Obtain the distribution of Activity 3 costs between HI and SMI for fiscal years 19PY, 19CY, and 19BY from the BDOO, BRSI, BDPA, BHA, and ORS ana- lysts (instructions for making the distribution are given in Part 14 of the Budget Mechanization Instructions Manual).

For each of the three fiscal years, prepare the overall HI/SMI split according to the following (the item titles will correspond to those used on the worksheet):

ITEM	EXPLANATION
A. Identifiable Costs	Workloads and other cost items which can be specifically identified with either HI or SMI--show MY's and total money (numbers from analysts' submis- sions) for BDOO, BRSI, BHI, BDPA, ORS, and BHA.
Sub-Total A	Total Identifiable Costs.
B. Common Costs	Show MY's and total money for BDOO, BRSI, BHI (showing separate figures for "Intermediaries" and "States"), BDPA and ORS as distributed by re- spective analysts in their submissions.
Sub-Total B	Total Common Costs.
Total A and B	Total Identifiable and Common Costs.
% Manpower	Show percentage HI-MY's and SMI-MY's each represent of total MY's shown in the item above.

OPEP, OC, OCF, OACT, OA, OPA, CCE (Orig. Act. 3 Split per above percentage)

Original Act. 3 totals for both HI and SMI less "Total A and B" items combined for HI and SMI. The remainder, representing that portion of Act. 3 not yet split, should be split between HI and SMI according to the MY percentages calculated for the item above.

Sub-Total (Controls to Orig. Act. 3 Total)

Here, HI sub-total plus SMI sub-total should equal original Act. 3 total for both HI and SMI.

Act. 4 (Amount prorated to Act. 3)

1. Obtain the following Act. 4 data from the BDPA analyst (*sample* figures are included here to make these instructions easier to follow):

    a. A/N Maintenance Function
        Percent related to HI--10%
        Percent related to SMI--4%

    b. E/R Maintenance Function
        Percent related to HI--12%
        (Since insured status is not a factor for SMI enrollment, there are no E/R maintenance costs distributed to SMI.)

    c. Split between A/N and E/R of total Act. 4. MY's to be distributed to Act. 3.

	A/N	E/R	Total
HI	200 MY	400 MY	600 MY
SMI	40 MY	0 MY	40 MY
Total	240 MY	400 MY	640 MY

2. From data in step 1. C. above, determine the percent of total Act. 4 MY's to be distributed to Act. 3 which are related to A/N maintenance function and the percent related to E/R maintenance function:

$$A/N = \frac{240}{640} = 37.5\%$$

$$E/R = \frac{400}{640} = 62.5\%$$

3. Determine value for HI and SMI portions weighted for the propor-tions of A/N work and E/R work:

HI: 10% (A/N maintenance) x 37.5%= .0375
     12% (E/R maintenance) x 62.5%= .0750
                                    ‾‾‾‾‾
                                    .1125

SMI: 4% (A/N maintenance) x 37.5%= .0150

4. Determine from weighted values derived in step 3 the relative HI/SMI percentage of total:

HI -- .1125) rounded = 88.2%
SMI -- .0150)   11.8%
       ‾‾‾‾‾   ‾‾‾‾‾‾
       .1275   100.0%

5. Use these percentages to split Act. 4 MY's and money to be dis-tributed to Act. 3 between HI and SMI.

Grand Total	
C.1. Total Identified Uninsured	Sum of items shown (with asterisks) by analysts in their submissions to be soley attributable to HI uninsured beneficiaries.
C.2. Balance HI Costs	Grand Total above less item C.1.
Grand Total HI Insured	Grand Total above less Grand Total of HI Unisured (see below).
Grand Total HI Unisured	1. Substract "Total Identified Unin-sured" MY's and money from "Sub-total, (controls to Orig. Act. 3)-- this is to avoid double-counting of identified uninsured costs.
	2. To split Act. 3 between HI insured and uninsured, prorate the figures derived in Step 1 above according

to the percentage split of total
HI benefit payments between in-
sured and uninsured. (HI benefit
payment data is provided by OAct.)

3. To split Act. 4 distributed to HI
between insured and uninstured,
it is necessary to refer back to
some of the data used in deriving
the HI/SMI Act. 4 split (the same
sample figures will be used for
this calculation). Since E/R
maintenance is not a workload
applicable to the HI uninsured,
the portion of Act. 4 prorated to
Act. 3 which represents E/R main-
tenance should not be applied to
HI uninsured. Using the previous
sample figures, the weighted value
for the HI protion of the Act. 4
distribution is .1125, composed
of:

.0375 (A/N maintenance)   33.3%
.0750 (E/R maintenance) or 66.7%
                          100.0%

In this example, since 66.7% of
the total is associated with E/R
maintenance, only 33.3% of the HI
portion of Act. 4 prorated to Act.
3 should be split between insured
and uninsured, using the percent-
age splits of total HI benefit
payments between insured and unin-
sured (also used in Step 2 above).

4. For both man-years and money, total
the uninsured portions obtained in
Steps 2 and 3 above. Then, add
the "Total Identified Uninsured"
back in. The result represents
"Grand Total Uninsured."

APPENDIX C: INTERMEDIARIES AND CARRIERS
USED IN REGRESSIONS

Chapter 6 contains the separate regression analysis of the administrative costs of the Medicare, Part A, intermediaries and the Part-B carriers. This appendix lists those intermediaries and carriers used in the regressions.

Alabama
  Blue Cross-Blue Shield of Alabama

Arizona
  Associated Hospital Service of Arizona, Phoenix

Arkansas
  Arkansas Blue Cross and Blue Shield, Inc., Little Rock

California
  Aetna Life and Casualty, Los Angeles
  California-Kaiser
  Hospital Service of California, Oakland
  Hospital Service of Southern California, Los Angeles
  Travelers, Los Angeles

Colorado
  Colorado Hospital Service, Denver

Connecticut
  Aetna, Hartford
  Connecticut Blue Cross
  Travelers, Hartford

Delaware
  Blue Cross-Blue Shield of Delaware

Florida
  Aetna Life and Casualty, Clearwater
  Blue Cross of Florida, Inc., Jacksonville

Georgia
  Georgia Hospital Service Association, Columbus
  Travelers, Atlanta
  United Hospitals Service Association, Atlanta

Hawaii
  Hawaii-Kaiser
  Hawaii Medical Service Association

Idaho
  Idaho Hospital Service

Illinois
  Aetna Life and Casualty, Peoria
  Chicago Blue Cross
  Illinois Hospital and Health Service, Inc., Rockford

Indiana
  Indiana Blue Cross

Iowa
  Associated Hospitals Service, Sioux City
  Hospital Service Inc., Des Moines

Kansas
  Kansas Hospital Service Association, Inc., Topeka
  Kansas Hospital Service, Inc., Kansas City

Kentucky
  Blue Cross Hospital Plan, Inc., Louisville

Louisiana
  Hospital Service Association of New Orleans
  Louisiana Hospital Service, Baton Rouge

Maine
  Associated Hospital Service of Maine

Maryland
  Maryland Hospital Service, Inc.

Massachusetts
  Aetna-Worcester
  Massachusetts Hospital Service
  Travelers, Lowell

Michigan
  Michigan Hospital Service, Detroit
  Travelers, Detroit

Minnesota
  Travelers, Rochester

Mississippi
  Mississippi Hospital and Medical Service, Jackson

Missouri
  Blue Cross Hospital Service, Inc., of Missouri, St. Louis

Montana
  Blue Cross of Montana

Nebraska
  Nebraska Blue Cross Hospital Service Association, Omaha
  Mutual of Omaha, Omaha

Nevada
  Aetna Life and Casualty, Reno

New Hampshire
  New Hampshire-Vermont Hospitalization Service

New Jersey
  Hospital Service Plan of New Jersey
  Prudential-Millville

New Mexico
  Hospital Service, Inc., Albuquerque
  New Mexico Blue Cross

New York
  Associated Hospital Service of New York
  Blue Cross of Northeastern New York, Inc.
  Blue Cross of Western New York, Inc.
  Chautauqua Region Hospital Service Corporation
  Group Hospital Service, Inc., Syracuse
  Hospital Plan, Incorporated, Utica
  Hospital Service Corporation of Jefferson County, Watertown
  Rochester Hospital Service Corporation
  Travelers, Garden City

North Carolina
  Blue Cross Plans of North Carolina, Chapel Hill

North Dakota
  Blue Cross of North Dakota

Ohio
  Associated Hospital Service, Inc., Youngstown
  Blue Cross Hospital Plan, Inc., Canton
  Blue Cross of Central Ohio, Columbus
  Blue Cross of Northeast Ohio, Cleveland
  Blue Cross of Northwest Ohio, Toledo
  Hospital Service, Inc., Lima
  Nationwide, Columbus

Oklahoma
  Group Hospital Service, Tulsa

Oregon
  Northwest Hospital Service, Portland

Pennsylvania
  Blue Cross of Greater Philadephia
  Blue Cross of Lehigh Valley, Allentown
  Blue Cross of Northeastern Pennsylvania, Wilkes-Barre
  Blue Cross of Western Pennsylvania, Pittsburgh
  Capital Blue Cross, Harrisburg
  Inter-County Hospitalization Plan, Inc., Glenside
  Travelers, Pittsburgh

Puerto Rico
  Blue Cross of Puerto Rico

Rhode Island
  Hospital Service Corporation of Rhode Island

South Carolina
  South Carolina Hospital Service Plan, Columbia

Tennessee
  Memphis-Aetna
  Memphis Hospital Service & Surgical Association
  Tennessee Hospital Service Association, Chattanooga

Texas
  Group Hospital Service, Inc., Dallas

Utah
  Utah Blue Cross

Virginia
  Hospital Service Association of Roanoke
  Virginia Hospital Service Association, Richmond

Washington
  Aetna Life & Casualty, Seattle
  Washington Hospital Service Association, Seattle

West Virginia
  Blue Cross Hospital Service, Inc., Charleston
  Parkersburg Hospital Service, Inc.
  West Virginia Hospital Service, Inc., Wheeling

Wisconsin
  Associated Hosptial Service, Inc., Milwaukee

Wyoming
  Wyoming Hospital Service, Cheyenne

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